ENVIRONMENTAL SENSING TRAINING GUIDELINES

ESSETS

AMERICAN INSTITUTES FOR RESEARCH

.1V1708
D366

M.C. MIGEL LIBRARY
AMERICAN PRINTING
HOUSE FOR THE BLIND

c. 1

ENVIRONMENTAL SENSING
TRAINING GUIDELINES

ESSETS

Environmental
Sensing
Selection
Evaluation and
Training
System

Carla de Haas

Robert A. Weisgerber

American Institutes for Research
P.O. Box 1113, Palo Alto, California 94302

HV1768
D366
copy one

The research reported herein was prepared with the support of the Bureau of Education for the Handicapped, U.S. Office of Education under Grant No. G007604405. Grantees undertaking such projects under government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view expressed do not necessarily represent official position or policy.

ISBN 0-89785-578-7

Prepublication edition;
not to be copied in any form

1978

INTRODUCTORY COMMENTS AND ACKNOWLEDGMENTS

Having been continuously involved for about five years with various aspects of research and development related to the blind and visually handicapped, I am impressed with how much we do know, and could better share, about ways blind persons' daily living skills and orientation and mobility skills can be enhanced. At the same time, I believe that progress has been hampered by a lack of methodological consistency in training and evaluation.

The ESSETS materials have been developed with the hope that evaluation and training could become more systematic and more effective. It is fair to say that they could not have reached their present level of detail and comprehensiveness without the expertise of Carla deHaas, whose orientation and mobility background and electronic travel aid familiarity have been invaluable. Similarly, the appearance of these materials (intended for eye appeal as well as ease of use) is in large measure the result of the secretarial skills of Angelica Hampel and the graphics efforts of Len Lutomski and Don Reed. All revisions were coordinated and blended by Anatta Blackmarr, Barbara Pletcher, and Barbara Milligan.

The following individuals affiliated with other organizations have been helpful to the project in a variety of ways. We thank them for their suggestions, efforts, and support. Field tryouts: Eddie Robinson, South Carolina Commission for the Blind; Bob Scheffel and Sam Hines, Atlanta Area Services for the Blind; Joey Baumbach, Northern Arizona University; Carol Seidberg, Arizona Industries for the Blind, Phoenix. Prototype materials were reviewed by Burdell Wurzburger, San Francisco State University, and Lee Farmer, Veterans Administration. Additional helpful information was provided by Bob Smith, Boston College; Stan Suterko, Western Michigan University; and Greg Goodrich, Veterans Administration.

Within the narrative text portions of this material we have used both the masculine and feminine forms of the pronoun wherever possible. However, readers will note that within the examples we have faced restrictions of space and format that have precluded our use of the he/she variant of terminology. For expedience, we have chosen to use the masculine in such instances. In no way do we mean to imply sex bias through this choice.

It should be kept in mind that though these materials were developed primarily for mainstreamed secondary and college level blind individuals they could also be used with adult blind persons receiving instruction through rehabilitation agencies. Some adaptation of the materials for young children (i.e., age 5) has been attempted, though it is not reflected in these published materials. Certainly, alternative versions of these materials are needed for young children, for the visually impaired geriatric population, and for persons having low vision.

We would hope that systematic techniques that may be developed for those populations will be similar in concept to those utilized in the present ESSETS materials. Eventually, this should lead to a fully comprehensive approach to training and evaluation.

Robert A. Weisgerber, Ed.D.
Project Director

GENERAL INFORMATION

- AN OVERVIEW OF ESSETS COMPONENTS AND ACTIVITIES
- TRAINING STRATEGY
- SHARING EXPERIENCES

AN OVERVIEW OF ESSETS COMPONENTS AND ACTIVITIES

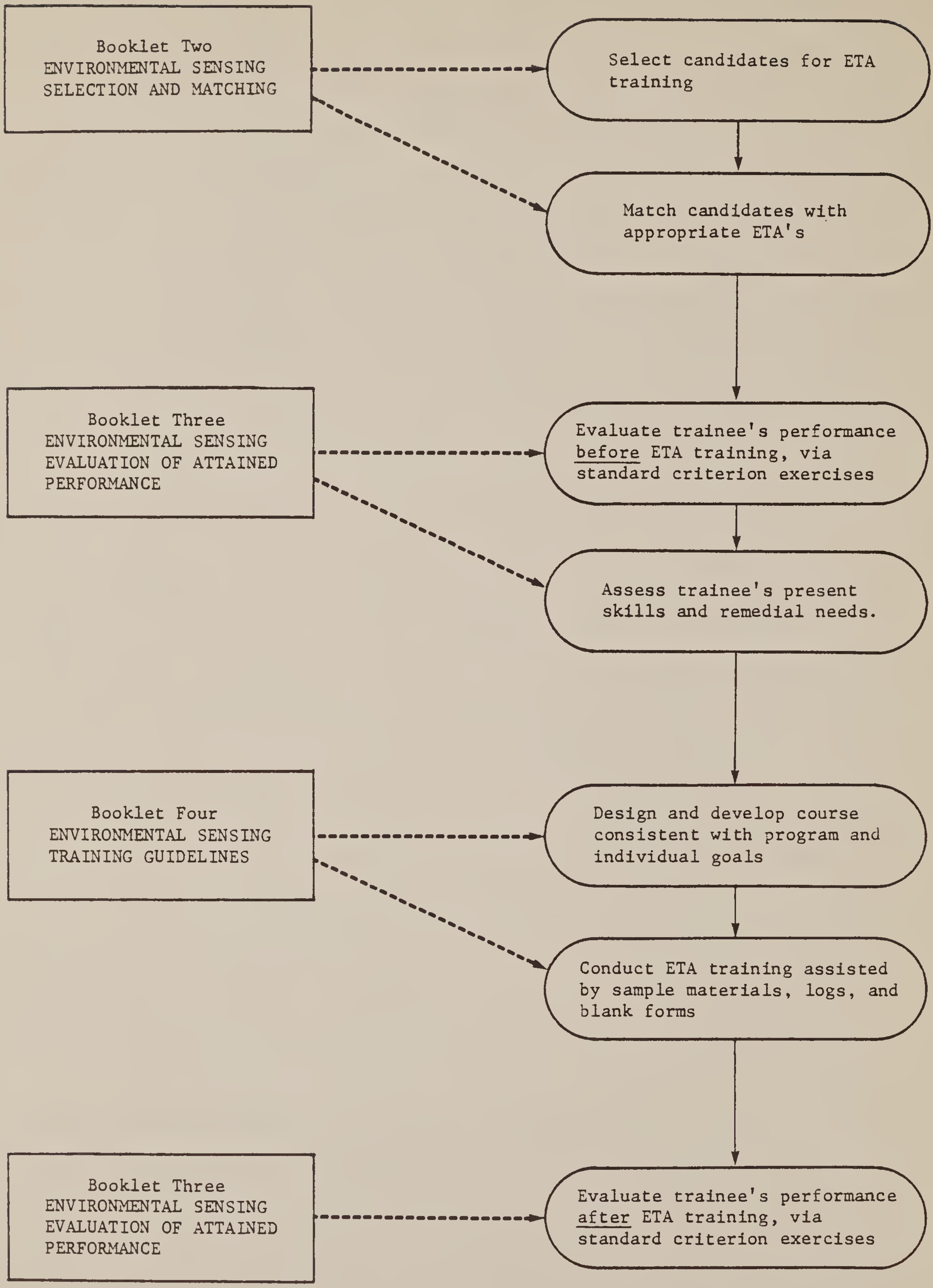
The *Environmental Sensing, Selection, Evaluation, and Training System*, or ESSETS, has four components, the first of which is a manual entitled *Environmental Sensing Reference Compendium*. In its 100 pages, plus glossary and index, it presents environmental sensing skills and their components in outline form, organized under eight topical areas: Topical Area I, Relating Body-Image and Surrounding Space; Topical Area II, Perceiving and Defining the Environment; Topical Area III, Relating Personal Movement to Environmental Factors; Topical Area IV, Relating Personal Movement to Distance, Time, and Rate; Topical Area V, Compiling a Cognitive Map; Topical Area VI, Planning, Executing, and Assessing Travel Routes; Topical Area VII, Optimizing Travel Performance; Topical Area VIII, Analyzing Personal Attributes for Greater Independence.

The second component, a manual entitled *Environmental Sensing: Selection and Matching*, has two parts. Part A emphasizes selection of ETA-training candidates. It includes material on "Physical/Medical Factors," "Internal Motivation," External Influences," "Cost Considerations," and "Readiness Assessment." Part B emphasizes matching the individual trainee with the ETA best suited to him or her. It consists of a series of Matching Trials for each of five ETAs.

Component three, entitled *Environmental Sensing: Evaluation of Attained Performance*, consists of a series of standard criterion exercises that offer a means of contrasting the trainee's performance *before* training, with his or her performance *after* training. When used in combination with the scores in the matching section of component two, these measures also differentiate existing skills from skills to be emphasized during training. Because of their design, the ESSETS exercises can be implemented at a variety of training locations, using simple, readily available set-ups.

Component four, entitled *Environmental Sensing: Training Guidelines*, involves sample lesson plans and general procedures for developing instructional strategies. It builds on information from components two and three. Emphasis is given to self-orientation skills (that is, the ability to orient oneself to a new environment independent of formal instruction), and to cooperative goal-setting by the trainee and instructor.

ESSETS COMPONENTS AND ACTIVITIES MODEL


Booklet Two
ENVIRONMENTAL SENSING
SELECTION AND MATCHING
Select candidates for ETA training
Match candidates with appropriate ETA's
Booklet Three
ENVIRONMENTAL SENSING
EVALUATION OF ATTAINED PERFORMANCE
Evaluate trainee's performance before ETA training, via standard criterion exercises
Assess trainee's present skills and remedial needs.
Booklet Four
ENVIRONMENTAL SENSING
TRAINING GUIDELINES
Design and develop course consistent with program and individual goals
Conduct ETA training assisted by sample materials, logs, and blank forms
Booklet Three
ENVIRONMENTAL SENSING
EVALUATION OF ATTAINED PERFORMANCE
Evaluate trainee's performance after ETA training, via standard criterion exercises

Note: Booklet One, ENVIRONMENTAL SENSING REFERENCE COMPENDIUM, is a companion document which can serve as a useful reference for environmental sensing behaviors and processes throughout.

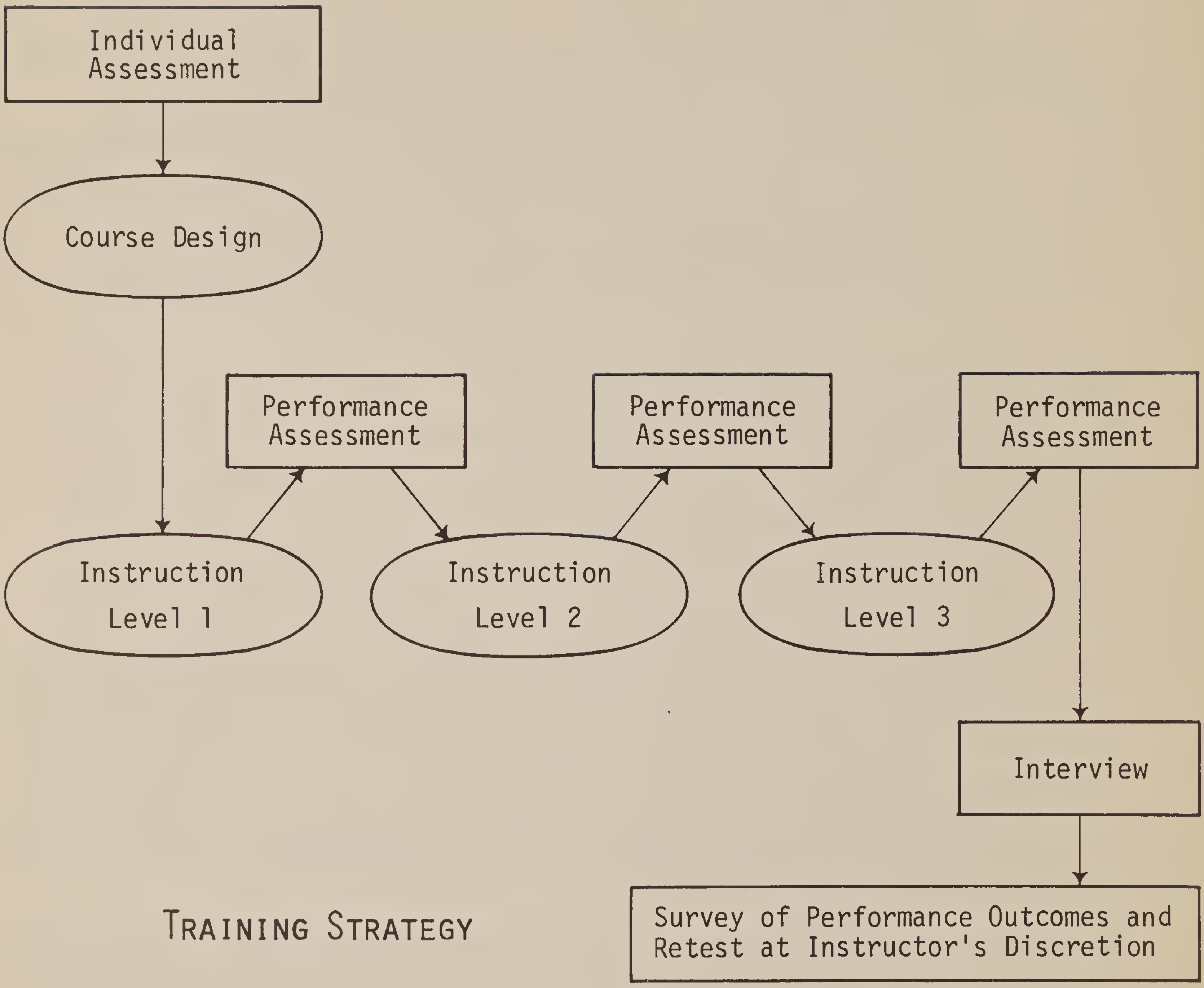
TRAINING STRATEGY

For the best training outcomes and the greatest continued ETA use after training, it is important that ETA candidates have been carefully selected and the most appropriate trainee-ETA match has been determined for each. To preserve the consumer orientation and degree of positive results intended in the ESSETS approach, it is highly desirable that the participating instructor or agency has access to a full set of ETAs.

The instructor who implements the Training Guidelines as part of the complete ESSETS package and approach will have selected the trainee and determined a trainee-ETA match through procedures in ESSETS Booklet Two, Environmental Sensing, Selection and Matching. Thus, the individual entering training should already have had hands-on experience with each of the five ETAs during the course of the Matching Trials--that is, those ETAs which are generally available at the present time.

Before beginning training, the instructor is urged to read through the Training Guidelines so that he or she may best understand the training strategy and instructional objectives, and recognize how the organization of materials permits their ready implementation. For example, prior to ETA training, the instructor and trainee are advised to carry out an individual assessment in order to identify any remedial needs and to determine the individual's level of existing skills. Such information is highly valuable in designing the training course and deciding on those skill areas which most require instructional emphasis. The Training Guidelines show how such information can be obtained through the use of already completed selection materials and through the administration of the Environmental Sensing, Evaluation of Attained Performance pretest (Booklet Three) preparatory to actual training.

The overall training strategy is shown on the following page. The diagram makes clear the relationships between training and evaluation that occur at a number of points during the development of trainee competencies.



TRAINING STRATEGY

SHARING EXPERIENCES

Instructors and agencies that undertake the ESSETS approach should consider meeting together for the purpose of sharing relevant ideas and information, and for comparing collected data.

Topics of discussion might include:

- Implications of training outcomes relative to 1) training procedures at different sites, 2) interpretive trainees' scores in the selection considerations, 3) interpretive trainees' scores with the device chosen in the matching trials, 4) the performance characteristics of the device with which the trainee was matched.

- Increasing time-efficiency through methods of scheduling multiple trainees and organizing equipment for quick changes of test set-ups during assessment in the field.

- Securing financial sponsorship for the acquisition of ETAs for use by individual ESSETS trainees after training. Agencies could gain support from a standardized trainee selection procedure and ETA-matching procedure (such as ESSETS) in justifying requests for ETA sponsorship.

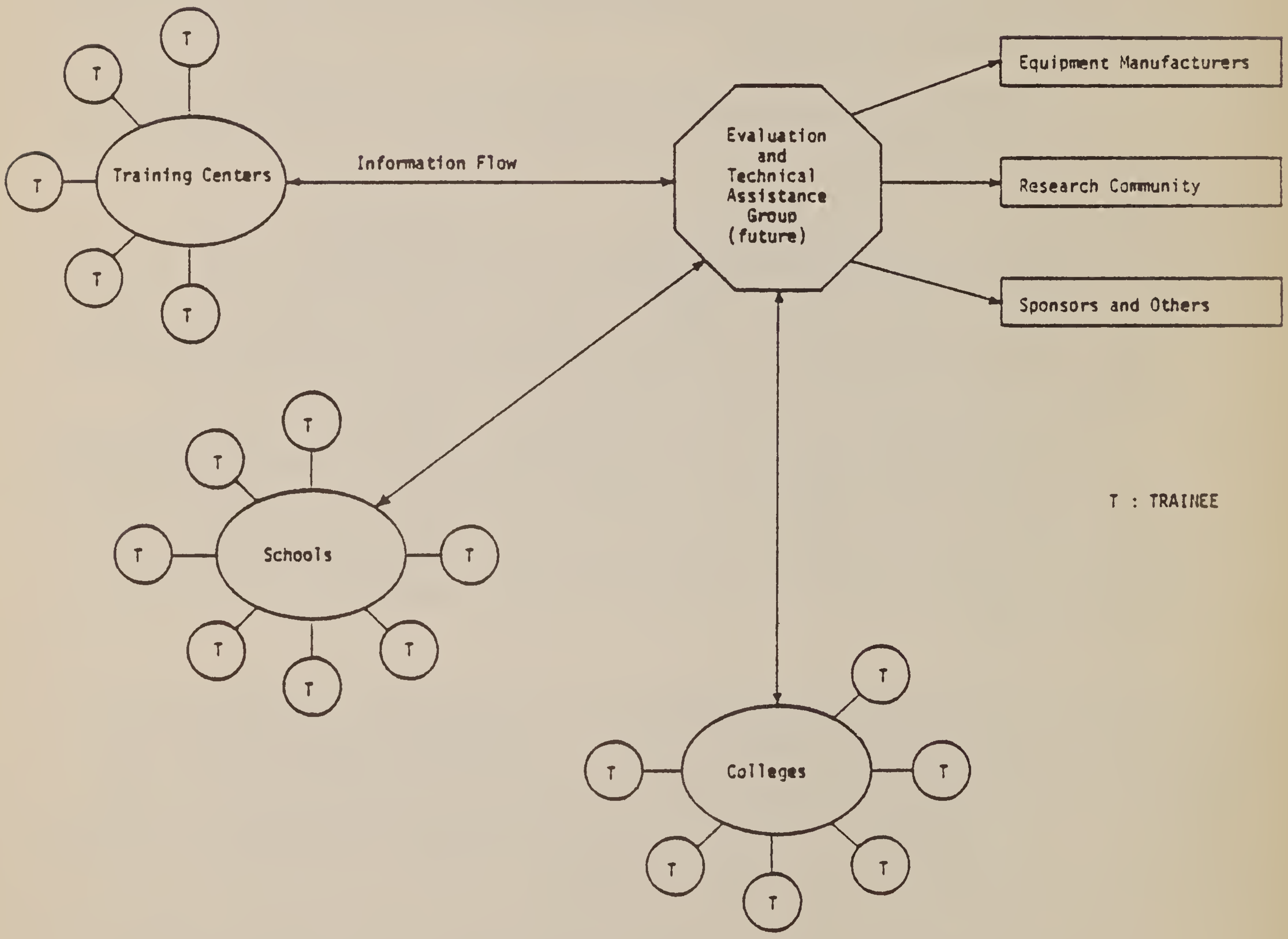
- Experiences with utilizing ETAs as instructional aids in independent practice drills (as suggested in Training Guidelines) to strengthen existing skills and reduce instructor time required for addressing remedial needs. This application of ETAs is distinct from their long term use in environmental sensing.

The ESSETS approach, if widely adopted and implemented, could enable the pooling of information from a cross section of training locations across the country to allow meaningful and practical analysis and interpretation. This information would naturally lead to validation or further refinement of specific exercises now contained in the ESSETS approach.

To the extent that a number of schools, colleges, and training centers (e.g., rehabilitation centers, agencies) utilize the approach and share their separate results, their accumulated experience could become a valuable resource for other concerned groups, such as equipment manufacturers who seek information that will help them to develop improved technology and for sponsors of service programs who want to know how trainees were benefited. Diagrammatically, the process model will be as follows.

THE ESSETS PROCESS MODEL

A Plan for Long-Term Sharing of Information



INSTRUCTOR PREPARATION

- DEVELOPING INSTRUCTOR COMPETENCIES
- ESTABLISHING REASONABLE EXPECTATIONS
- ORIENTATION TO ETA'S

DEVELOPMENT OF INSTRUCTOR COMPETENCIES

For ESSETS utilization to be most effective and time-efficient, it is important for the instructor to be thoroughly familiar with the content, intent, organization, and sequence of use for each of the ESSETS components. He or she should acquire this familiarity before beginning to use ESSETS materials with students. This will enable the instructor to: 1) gather or construct any equipment (e.g., stopwatch, poles) required for ESSETS evaluations and training, 2) determine local sites which meet criteria in the various evaluative exercises, and 3) generally undertake ESSETS activities in an efficient and organized fashion.

There are several ways in which familiarity with ESSETS may be gained. Obviously, an instructor who already has the four component booklets may simply study them carefully before selecting, matching, and instructing his or her first ETA trainee. ESSETS' authors, however, recommend that any instructor planning to use the ESSETS approach for the first time, contact--and, if possible, spend a day of professional visitation with--an instructor who has already become conversant with the materials through an ESSETS workshop or through actual use of the ESSETS approach. In terms of ease and brevity, this would be the preferable method for becoming familiar with ESSETS and the procedures for its efficient implementation, and would provide greatest assurance of its appropriate use.

Some schools and agencies, after having utilized ESSETS materials, may wish to host a brief ESSETS workshop for instructors from interested organizations which have not yet used the materials. Similarly, it is appropriate for the ESSETS approach to be included among the techniques brought to the attention of educators undergoing graduate ETA training at certifying colleges and universities.

A workshop or other ESSETS familiarization activity might include the following topics:

- an overview of ESSETS components and activities
- purpose and potential of the ESSETS approach--organizing ETA instruction to meet individual trainee goals and capabilities; collecting mergeable data for research and evaluation

- procedure for administering Selection Considerations, Matching Trials, and Evaluation of Attained Performance Exercises--importance of using specified equipment; importance of presenting instructions to the trainee as they are written for purposes of standardization; scoring procedures and instructor discretion in use of re-test options
- procedures for transferring scores to the Summary Sheets, including the Profile for Selection of Candidates and the Profile for Matching with Electronic Travel Aids; assistance in interpreting both profiles
- use of Training Guidelines' techniques for on-going trainee assessment and for "tailoring" a course to the individual trainee's needs and progress
- the ESSETS test-teach-test model for identifying total training outcomes
- the need to maintain objectivity in administering and scoring all materials

In developing familiarity with ESSETS, it is not at all safe to "skip over" the general information sections which appear at the beginning of ESSETS booklets two through four, and immediately preceding each new ESSETS activity. These sections contain not only items of importance such as a glossary of terms and abbreviations as used in ESSETS, but also help orient the instructor to the various instructional and evaluation segments immediately following these sections.

The following review of ESSETS Evaluative Materials should prove helpful in any ESSETS familiarization activity.

NOTE: FORMAL TRAINING EXPECTATIONS

ESSETS is intended for use by Orientation and Mobility instructors who have received formal training not only in O&M, but also in the use of electronic travel- and sensory-aids for orientation and mobility.

REVIEW OF THE EVALUATIVE MATERIALS

There are two principal stages of assessment: 1) the selection of candidates for training and the matching of the candidate with an appropriate device, and 2) the evaluation of trainee competencies before training, to establish existing skills and after training, to establish what has been learned.

Selection and Matching

Selection and matching is done sequentially as a series of steps or checkpoints. Each step is designed to help sharpen the selection of ETA training candidates and the determination of the appropriate trainee-ETA match. These steps are described in two sections as follows:

> Selection of Candidates. This section covers evaluative considerations of importance to the selection of blind persons for training with ETA equipment.
>
> Considerations one through four provide: 1) a checklist table dealing with physical/medical considerations that could limit performance with a particular device, 2) an assessment of the internal motivation toward mobility presently held by the candidate for training, 3) an assessment of external influences which could increase the individual's need to be mobile, and 4) an assessment of the ability of the individual and/or an organization to pay the costs associated with purchase and maintenance of ETA equipment following training.
>
> Recognizing that a certain amount of prior orientation and mobility awareness and skill is desirable before entering training, considerations five through seven provide performance-based readiness assessments for: 1) existing basic mobility skills, 2) level of awareness of environmental elements typical of commonly encountered environments, and 3) functional knowledge of compass directions.
>
> This section ends with an overall profile for selection.

Matching with Electronic Travel Aids. This section focuses on the individual's ability to interpret and respond to signals by various ETAs, and on the individual's need to have hands-on experience with a variety of ETAs in order to reach an informed opinion as to which ETA would best meet his or her needs. Matching Trials are designed to be given after a bare minimum of familiarization with each device; they nevertheless should provide an indication of how readily the individual can utilize the respective ETAs for increasingly complex tasks. In effect then, the matching trials are samples of what could be expected during training.

This section includes trials for, 1) the Pathsounder, 2) the Nottingham Obstacle Detector, 3) the Mowat Sensor, 4) the Laser Cane, and 5) the Sonicguide. Questions to elicit the individual's subjective appraisal of each device follow the matching trials for that device.

This section ends with an overall profile for matching.

Evaluation of Attained Performance. This evaluation of trainee competencies is accomplished by giving performance exercises before and after training. Performance exercises are presented on three levels which coincide with the three levels of ETA training. The exercises are administered once before training to measure existing skills, and after training to determine gains. Level 1 contains six exercises, Level 2 has seven, Level 3 has eight. Each exercise shows "bulleted" instructional outcomes which presumably could be enhanced through proper use of an ETA. Level by level assessments of trainee progress are provided. A summary of performance exercise pretest and posttest scores is utilized to assess final training outcomes after training has been completed on all three levels.

THE NEED FOR OBJECTIVITY can hardly be overemphasized. In filling out the selection and matching materials for a "special" student, the instructor may experience a great temptation to put down what he or she thinks are the "right" answers to assure ETA candidacy or to bring about a match with a particular ETA he or she has in mind. In this situation the instructor should realize that *instructor discretion* is invited to come into play *in the interpretation* of the Profiles for Selection and Matching. But in exercising that discretion, the instructor needs to be able to refer to *objective data* which can be collected only through proper use of ESSETS materials. In fact, if the instructor enters scores on the basis of his or her own feelings, rather than on the basis of best knowledge of the facts, he or she will be deciding ETA candidacy and match *for* the trainee rather than *with* the trainee. In summary, what is needed is a *body of objective information* with which an *informed subjective judgment* can be made.

ESTABLISHING REASONABLE EXPECTATIONS

Every trainee is different, bringing different levels of readiness to the training situation and having different kinds of expectations about training outcomes. Understandably, some trainees set unrealistic goals or expect instant mastery; certainly these persons need to be counseled so that they are not disappointed. On the other hand, setting goals that are too low may unnecessarily limit the opportunities for achievement.

The type of skills developed, the number of skills enhanced, and the degree to which a given skill is enhanced through ETA use are influenced by many factors. Chief among these are: the extent to which the user understands and masters the device; the proficiency in related skills; the creativity with which a person attempts applications of the device in both orientation-and-mobility and non-orientation-and-mobility situations; the ultimate limitations inherent in the device itself (range, sensitivity, signal variety, etc.).

In light of present information, the use of an ETA can be reasonably expected to lead to improvement in certain kinds of skills:

- ability to control/correct veer
- ability to use public transportation
- increased control in interactions with sighted public
- use of ambient sound
- use of landmarks
- ability to transfer environmental element recognition skills
- avoidance of obstacles
- use of/interaction with shoreline

On the basis of comprehensive improvement in the above skills, ETA mastery should also increase the efficiency and safety with which the blind person moves through his or her environment and reaches intended destinations, the ability to establish and maintain orientation in both familiar and new areas, and the ability to travel with a minimum of deviant peripatetic behavior.

Again, the extent of these improvements may be limited by the design and performance characteristics associated with the various devices.

In determining expectations, it is important for the instructor to have a good understanding of the following:

- the characteristics of the ETA with which the trainee is matched
- the trainee's abilities and baseline orientation-and-mobility skills
- the variety and complexity of tasks and environments in which the trainee wishes to apply the ETA

The amount of time and effort needed to master an ETA (in order to take full advantage of its utilization) will depend to a great extent on the above factors. Thus, the decision as to what constitutes realistic expectations of progress for the individual might best be based on that trainee's baseline performance level and range of proficiency in relevant areas before ETA training is begun, together with the potential for environmental sensing inherent in the device with which he or she is matched.

Techniques for assessing the trainee's baseline performance are given in the third section of these guidelines. The extent of the trainee's progress during training and the extent to which he or she has met or surpassed expectations after training may be determined by comparing this baseline performance level with the attained performance level during and after training.

In order for the trainee and instructor to establish reasonable expectations, both must realize that ETA mastery in and of itself is not a substitute for orientation-and-mobility basics such as sufficient knowledge of vehicle traffic patterns to allow safe street crossings, or a functional knowledge of compass directions. ETAs as instructional aids may facilitate learning of some basic skills, but ETA mastery in and of itself should be expected to supplement, enhance, and improve skills that may already exist.

The instructor who is familiar with design characteristics of the trainee's chosen ETA can capitalize on these characteristics. Specifically, he or she should find situations in which the device can be used creatively so that it provides "extra" benefits to the trainee. In that way, the instructor can encourage and assist the trainee to take full advantage of all the ETA has to offer. At the same time, neither the instructor nor the trainee will expect more from a given ETA than that particular device can technically deliver.

If the trainee and ETA are properly matched, the trainee's abilities and motivation and the ETA's design characteristics should complement each other. Ideally, a mutually reinforcing relationship should develop in which the trainee's abilities, enhanced by the ETA, grow to an extent which encourages full exploitation of the ETA's potential.

NOTE:

Every person entering training should be informed that neither the training program nor the electronic travel aids can guarantee their safety. Moreover, through damage, poor maintenance, or incorrect use, ETAs can become unreliable regarding the environmental information they supply. As a precautionary step, the wise user should continue to practice basic, non-electronic travel skills even after learning to use one of the ETAs.

In view of these cautions, it is recommended that a signed release form be obtained from each participant before beginning training. If the individual is under 18, that person's parent or guardian must sign the release form. Note that these recommended releases are common-sense procedures and in no way indicate skepticism about the usefulness of the ETAs and their capacity to improve the individual's safety and travel efficiency over the long run.

ORIENTATION TO ELECTRONIC TRAVEL AIDS (ETAs)

General Overview

A variety of ETAs have been designed and refined to various degrees of capability in the years since World War II*. Of these, a few have reached the production stage. The devices have been variously mounted and have employed a variety of energy systems and methods of displaying information. ETAs have been designed with the intention of assisting the visually impaired person during travel. Basically, they try to assist the traveler by increasing the information he or she can receive directly from the immediate physical environment and increasing the distance at which such information becomes accessible to him or her.

Some ETAs have been intended as primary mobility aids, some as secondary aids. Some have been designed with the basic intention of providing the user with advance warnings of the obstacles directly in his or her path, but beyond cane-range; these ETAs are usually called "clear path indicators," "obstacle detectors," or "go/no-go" devices. Others have been designed with the intention of providing the user with simultaneous information about the characteristics and location of many objects in the environment, whether or not those objects are directly in the travel path. These ETAs are usually called "environmental sensors." Some ETAs are intended for continuous use during travel; others are designed for occasional use during travel, with the intention of extending the distance from which a blind person may confirm the location of an anticipated object, or of helping him or her navigate an especially difficult part of the travel route. As is already evident, ETAs can assist the user in orientation as well as in mobility.

In practice, most ETAs fall somewhere between the classification of simple "go/no-go" obstacle detector and that of "environmental sensor." While they may not spontaneously and continuously provide information on areas lateral to the travel path, in normal use they are capable of providing a considerable amount of information on the physical environment. Thus, they can be used for sensing the environment and providing information beyond that necessary for a traveler to make a "go/no-go" decision.

---

*For example (alphabetically), Bionics C-5 Laser Cane; Dearing Light Sensing Cane; Franklin Institute Cane; Mims Infrared Glasses; Mowat Sensor; Mowat Ultrasonic Cane; Nottingham Obstacle Detector; Russell Pathsounder; Sonicguide; Swedish Laser Cane.

Because ETAs *do extend the boundaries within which a blind person can receive information* on tangible elements, and because they *may enhance the information available within pre-existing boundaries*, one may speculate as to their usefulness in situations other than orientation and mobility activity. Exploration and experimentation with ETA use in non-travel situations could lead to the discovery of many instances in which these devices can be helpful apart from orientation and mobility.

The prices of ETAs vary by device. Detailed information on ETAs may be readily accessible locally or may require correspondence with their respective manufacturers or distributors.

The following pages are organized by device and present basic information on five ETAs: the Russell Pathsounder, Mowat Sensor, Nottingham Obstacle Detector, C-5 Laser Cane, and the Sonicguide. This information is intended as a brief initial orientation to these devices for those who are not familiar with them, and as a short recapitulation of some salient points for those who are. It is *not* intended as a substitute for the more detailed information which an instructor should obtain from a given ETA manufacturer or distributor before purchasing an ETA, nor does it substitute for the *formal ETA training the O&M specialist should receive* before beginning to instruct a student in the maintenance and use of an ETA.

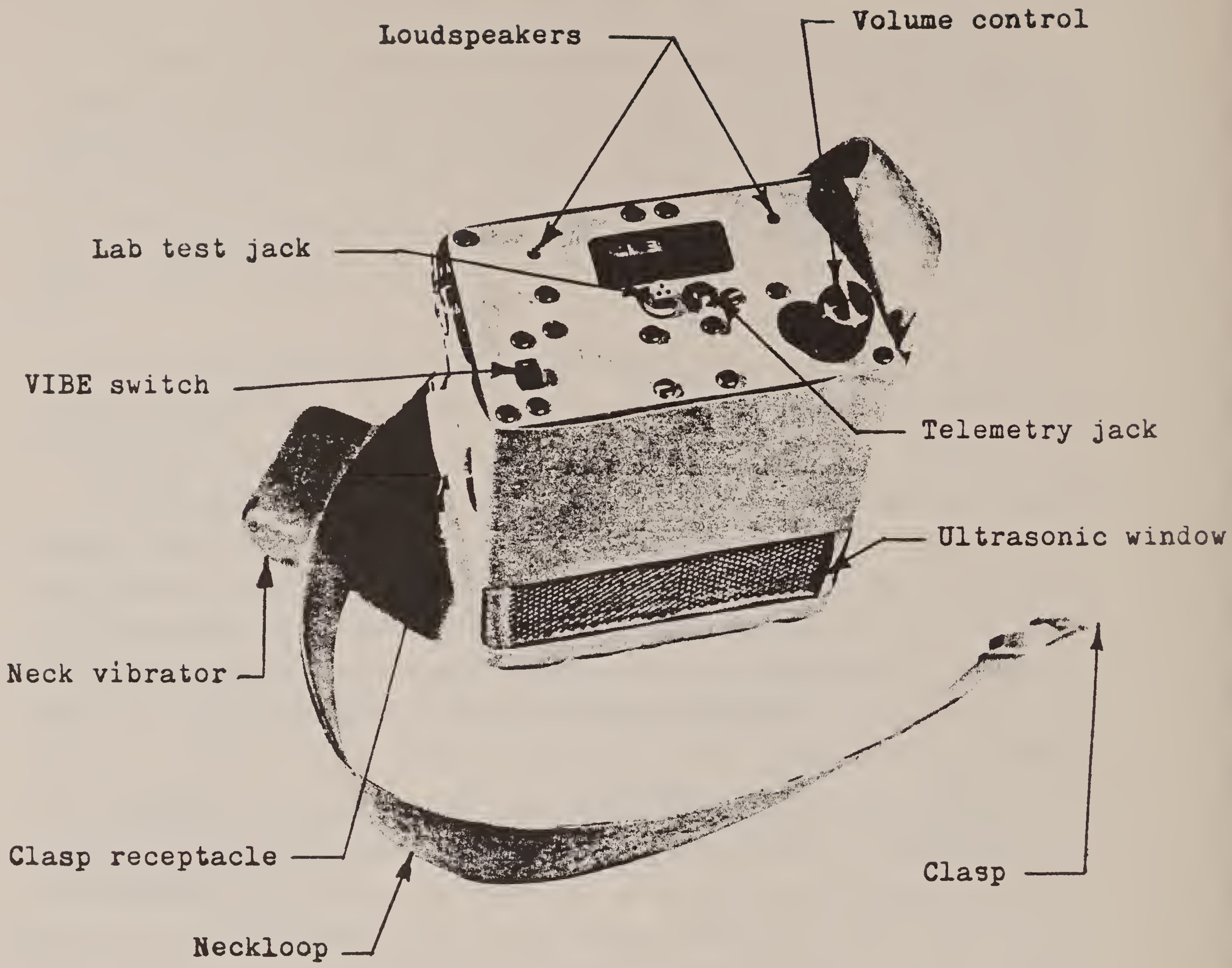
Pathsounder (PS)

The PS, a battery-operated sonar, 4-1/2" x 3-1/2" x 2", intended as a secondary mobility aid, is worn on the chest by means of a neck-strap. In position and switched-on it sends out ultrasonic beams which continuously probe the environment to a distance of approximately 6' ahead of the wearer, at a level from about the waist to the top of the head. Were it visible, the zone of coverage would appear cone-shaped, with its apex at the ultrasonic window in the front of the PS, and its maximum diameter of 20" to 24" about 6' from the user's chest.

The PS can present an audible display consisting of a buzzing sound for objects between 72" and 33" away, and a high-pitched beep for objects 32" away or nearer. It can also present a vibratory display, consisting of a rapid vibration, or "quivering" of the entire PS for objects between 72" and 33" away, and vibration of a vibrator in the neck-strap (felt on the back of the neck) for objects 32" away or nearer. Manual controls allow the user to set the PS so that either the auditory or the vibratory display will be presented, or the PS may be set to present both displays simultaneously. The vibratory display is considered especially useful to people with significant hearing loss.

When there is no object in range there is no display. PS object-detector-acuity is reduced for objects which are "weak reflectors" (e.g., cloth) when they advance to 15" or less from the PS. By turning down the volume control for the audible signal to less than about 80% of total possible volume, the user may activate a "ramp" feature as part of the audible display. When this feature is activated, the audible buzzing signal becomes louder as an object becomes nearer, and fainter as the object becomes more distant.

The PS is designed specifically as a "go/no-go" device, a clear-path indicator, which is intended to detect and inform the user about only those objects (pedestrians, overhangs, etc.) which occur directly in his or her travel path and enter the zone of coverage (from waist to head height). To detect or locate an object lateral to the line of travel, the PS user must do a "shoulder scan," turning his or her upper body so that the ultrasonic beams of the PS are directed towards the area the user wishes to explore. A "shoulder scan" can also aid the PS user in roughly determining physical



ON-OFF switch and charging jack are on bottom - not visible in photo.

Russell Pathsounder
Model E

boundaries of a detected object. The height of PS detectable objects (e.g., awnings, parked bicycles, etc.) depends somewhat on the height of the PS user. PS display does not normally give information about obstructions occurring at ground level; however, the tilt of the ultrasonic beam can be slightly adjusted by the manufacturer to extend upper or lower coverage (not both). The PS has been successfully adapted for use by persons confined to wheelchairs.

The PS will operate for 2-5 hours on a fully charged battery, depending on the frequency and duration of signal activation, and especially the vibratory display, which requires more power. A battery charger which runs on house current should be ordered with the PS. About 2 hours of charging are required for each hour of use, and a nearly-dead battery requires a 14-hour charge period to be fully restored.

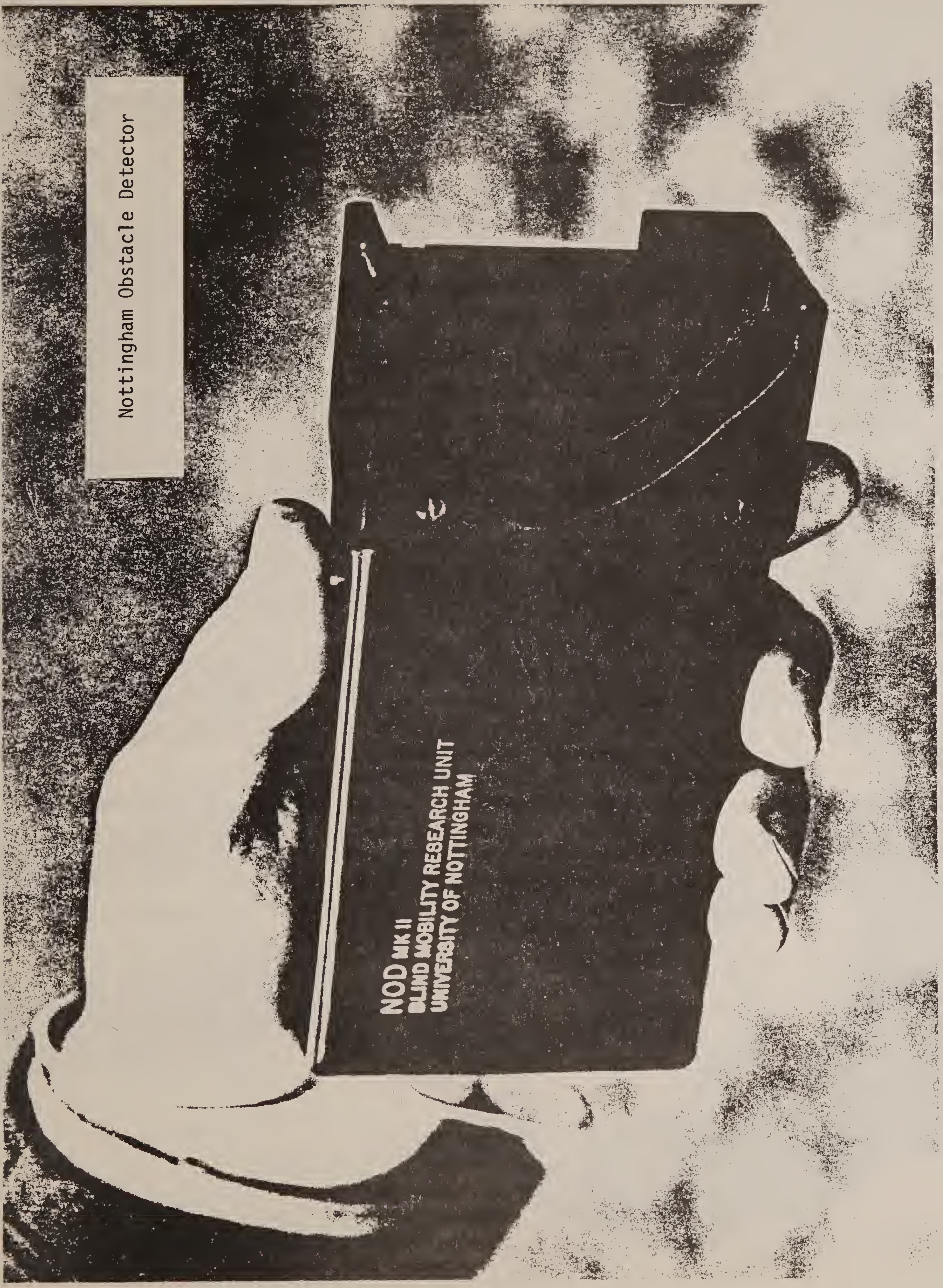
Nottingham Obstacle Detector (NOD)

The NOD is a small, hand-held, battery-operated ultrasonic device. It is intended as a secondary mobility aid to be used intermittantly during travel in order to check on the presence and distance of obstacles or landmarks. (While not in use, it might fit into the user's pocket or purse.) It can, in fact, be used intermittantly or continuously during travel.

When switched on, the NOD sends out a narrow ultrasonic beam which probes the environment to a distance of 7' in front of the transmitter. The beam can be directed according to the way the device is held. For example, the NOD user may hold it in a "fixed" centered position or a "fixed" lateral position, or he or she may scan with it, directing the ultrasonic beam such as one directs the beam of a flashlight.

The NOD presents an audible display utilizing the eight notes of a major musical scale; each note corresponds to a 12" range of object/obstacle distance. For example, the lowest note would sound for a detected object 0"-12" away. The highest note would sound for a detected object 72"-84" (7') away. If several objects are in range simultaneously, the NOD signals for the nearest object only.

A separate battery charger comes with the NOD. The battery should be recharged about twice a week.



Nottingham Obstacle Detector

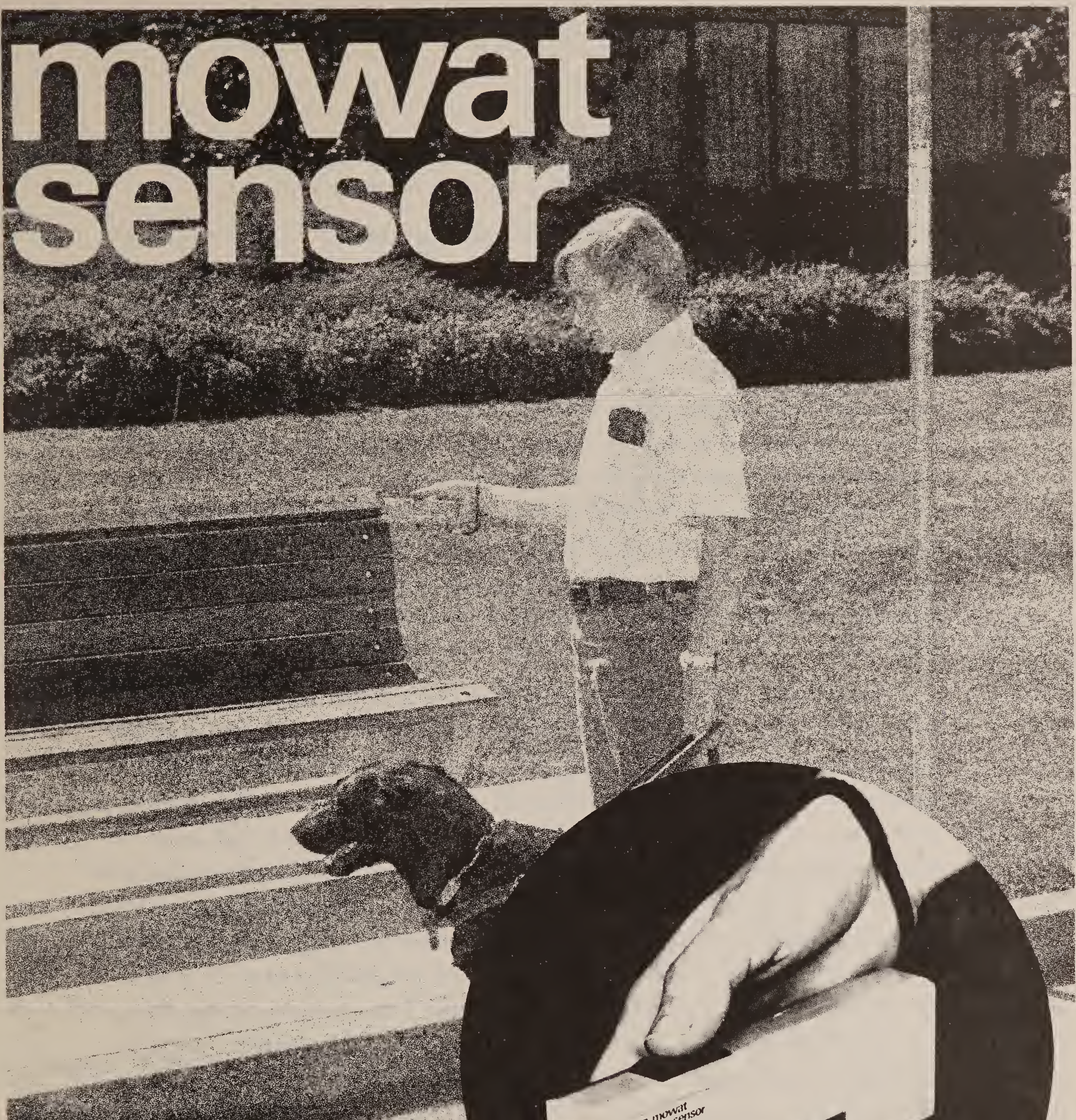
Mowat Sensor (Mowat)

The Mowat is a small (6"x2"x1"), hand-held, battery-operated ultrasonic device intended for use as a secondary mobility aid. The ultrasonic beam by which it probes the environment delineates an elliptical zone of detection with a width of 15° and a height of 30°. In switching on the Mowat, the user can select either the long-range setting of approximately 14' or the short-range setting of approximately 3' distance.

This device has a vibratory display. Its signal is activated by the *nearest* object in signal range. When an object is in range, vibration is produced within the Mowat, and the user, holding the device, feels this vibration. This type of display may be especially useful for visually impaired persons who also have a hearing loss. An earpiece is available; it attaches to the Mowat and translates the vibratory signal into an audible one. Thus, the earpiece is recommended for teachers who wish to monitor the Mowat signal during instruction, and is also useful for blind persons who wish to use the Mowat, but have difficulty in detecting or interpreting the vibratory display because of an impaired tactile sense.

The Mowat signal carries information on the distance as well as the presence of the detected object. The nearer the object, the more vibrations per second are produced in the display. For example, 40 vibrations per second are produced for an object 1'3" away, but an object 13' distant will cause only 10 vibrations per second. By scanning with the Mowat, the user can also obtain information on the direction of an object.

The Mowat comes with a rechargeable battery and a battery charger which works on house current. The battery should be recharged after approximately eight hours or one day's use. A 14-hour charge may be required to recharge a nearly "dead" battery. The Mowat will also run on any 9v battery of the same size and shape as its own nickel-cadmium battery.



Mowat Sensor

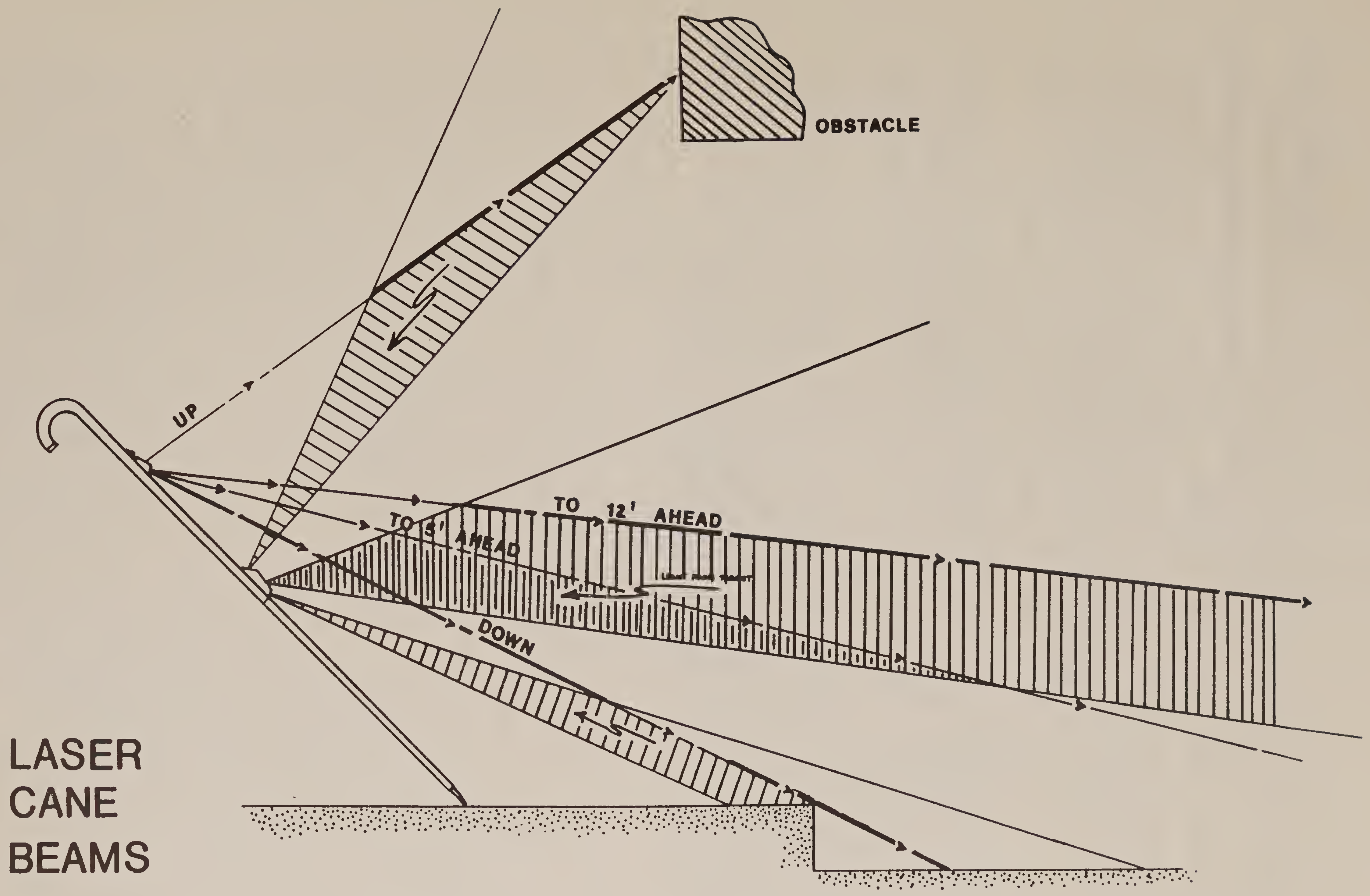
Laser Cane (LC)

The Laser Cane is a battery-operated device intended for use in place of the standard long cane as a primary mobility aid.

Switched on, it probes the environment by means of 3 infrared light beams directed along a downward, a forward, and an upward channel, respectively, to detect drop-offs and obstacles, including overhead obstructions. The user is informed of detected objects via an audible display: a low, rasping tone for drop-offs, a medium-pitched tone for objects in the forward beam, and a high-pitched tone for objects in the upward beam. In addition, a tactile stimulator contacts and vibrates against the user's index finger whenever the forward beam detects an object. This tactile stimulation occurs simultaneously with the audible forward signal display; if the user wishes, he or she can completely turn down the volume of the audible display for the forward channel and receive only the tactile display for that channel. The downward and upward channels have audible displays only.

The LC user may set the forward beam for a range (detection distance) of 5' or 12' from the cane tip. The upward beam will detect an object 6' high within 18" of the cane tip; this range can be adjusted by the manufacturer to accommodate for differences in user height. The downward beam will detect a 6" or greater drop-off at a distance of about two paces in front of the cane tip. A "false" down signal may be produced in some circumstances (e.g., by travel on a highly polished black surface; by lifting cane tip too high off the ground). The forward and upward signals will fire simultaneously if an object detected by the forward beam is within 18" of the cane tip and tall enough to extend into the upward beam (e.g., a wall), thus providing information on the height of an object initially detected by the forward beam only.

The LC was developed chiefly to provide advance warning of obstacles and drop-offs, and hence might be considered essentially a clear-path indicator. However, it is also true that the LC user employs the cane in standard long cane technique (e.g., two-point touch technique), and in so doing can receive a significant amount of information on the area lateral to this travel path through the laser beams, directed from optics in the front of the cane, which probe the shorelines within beam range at each



Laser Cane Beam Configuration

extreme of the cane's arc. An object detected during arcing/scanning with the LC may be located by determining at what point in the arc the signal was initiated. Physical boundaries of a detected object may be approximated by scanning that object with the LC beams.

The LC has two sections: the upper section, housing the electronics, is 21-3/8" long and has a 1" diameter; the detachable lower section, or shaft, comes in various lengths (in 1" increments to accommodate the variations in user height). The entire LC weighs just over one pound.

The LC comes with a (separate) battery charger. It will run approximately 3 hours between charges, and 12 hours are needed to completely recharge the battery. The battery itself has a life of 1 to 2 years, and is easily replaceable.

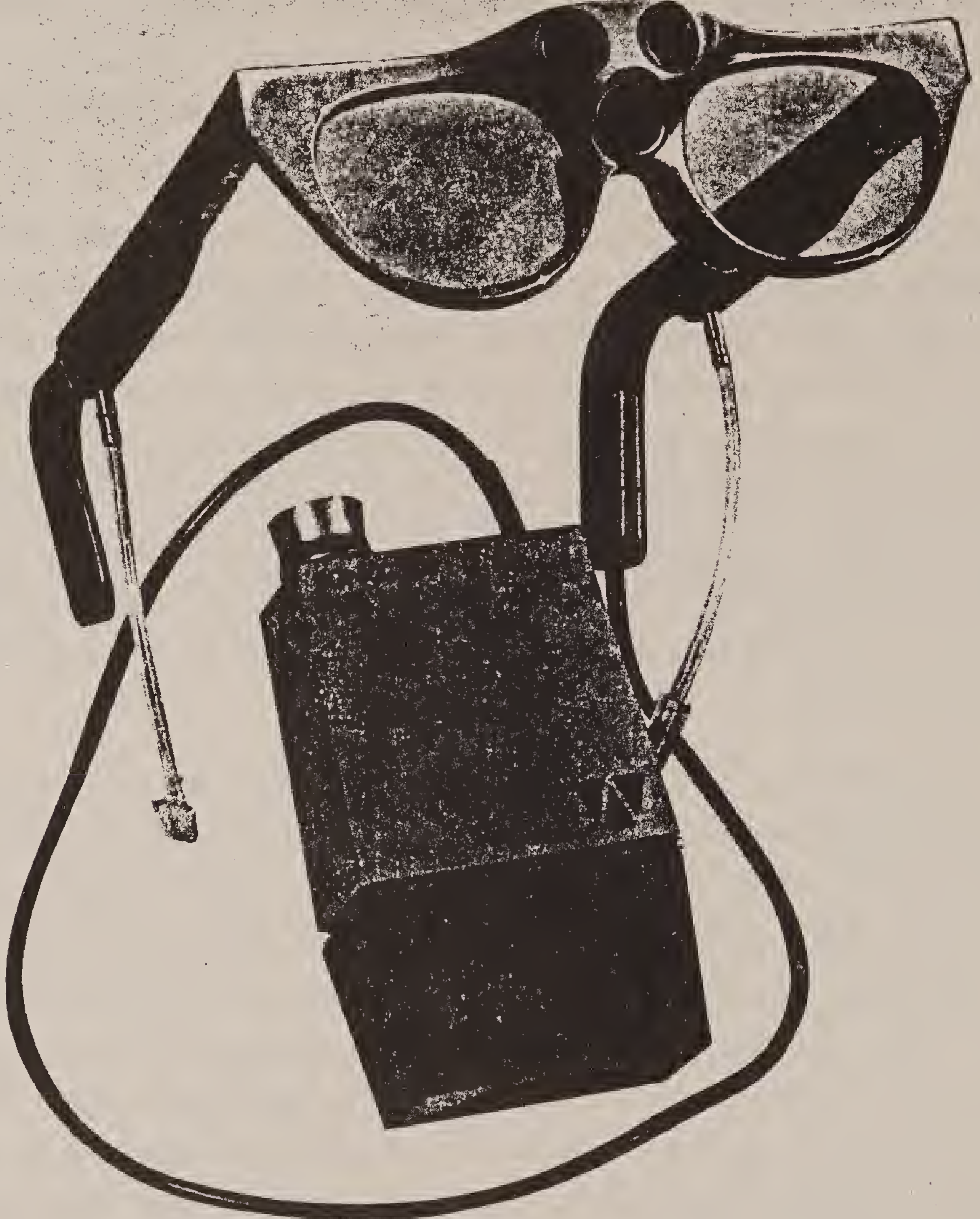
An optional wireless monitoring device is available for instructors. Consisting of two adapted walkie talkies, one of which is plugged into the battery jack of the LC, the monitor enables the instructor to hear LC signals received by his or her students from considerable distances.

Sonicguide (SG)

The SG is a battery-operated, ultrasonic binaural device, intended for use as a secondary mobility aid and environmental sensor. Its transmitter and receivers are built into what looks like, and is worn as, a frame for eyeglasses. A power cord attaches this eyeglass frame to the SG control box and battery. These are contained in a single unit and may be carried on a shoulder strap, or at the belt, or will fit into a person's pocket.

Switched on, the Sonicguide sends out ultrasonic beams which continuously probe the environment to a distance of about 20', and with a beam width of about 90^0 (from 45^0 left of center to 45^0 right of center). If visible, the zone-of-coverage would appear roughly cone-shaped, with its apex at the transmitter located in the bridge (nose-piece) of the eyeglass frame. When an ultrasonic beam strikes an object, or perpendicular plane, within this zone, ultrasonic signals are reflected back to the receivers (located just above the transmitter), converted into audible signals, and conveyed to the SG user via small tubes running from the eyeglass frame to the user's ears.

The SG display is intended to supply the user with information on the direction, distance, and surface qualities of reflecting objects. The texture of the reflecting surface affects the signal's tonal characteristics; the distance from the reflecting surface determines the signal's pitch; the signal from a given object is loudest in the ear nearest that object. Thus, for example, after detecting an object, the SG user may turn his or her head to find the position in which the signal from that object is equally loud in both ears; the user then knows he or she is facing directly toward that object. Next, by interpreting that signal-pitch the user can gauge his or her distance from the object. Finally, the signal quality (sharp or fuzzy) can be used to give SG users an idea of the surface characteristics of the object. Physical boundaries of a given object may be approximately determined by scanning the object with the SG until the tone abruptly changes at each end. Many environments present a number of reflecting surfaces, and in such situations the SG display is rich and varied, simultaneously presenting signals from objects in the line of travel and objects lateral to it. Only through experience can these rich and varied sounds be fully interpreted and utilized.



sonicguide

Sonicguide

Each SG comes with two batteries and a battery charger. Batteries have an operating life of 5 hours each. It takes about 10 hours to completely recharge a near-dead battery. One battery may be in use while the other is being charged.

A special SG with adjustable frames is available for training purposes. Its telescoping arms allow it to accommodate to a variety of head sizes. Normally, a SG that is intended for use by one specific individual would be made-to-measure after a fitting session. The arms of the fitted SG fold, but those of the training model do not.

A monitoring device is available and should be obtained by any instructor intending to teach SG use. (Use of the monitor is the only way the instructor can hear SG signals simultaneously with his student.) The monitor is worn like another pair of glasses, with an 11' connecting wire leading to the trainee's SG.

INDIVIDUAL ASSESSMENT FOR COURSE DESIGN

- INDIVIDUAL ASSESSMENT

- IDENTIFYING REMEDIAL NEEDS

- BASELINE ASSESSMENT

INDIVIDUAL ASSESSMENT

Previously, it was explained that the ESSETS approach involves a close relationship between evaluation and training. As a result of evaluations undertaken in the Selection and Matching booklet, a decision will have been reached about who should enter training and which ETA would most benefit each respective trainee.

Now the focus shifts from selection of trainees and devices to individual instructional needs. The training course should be designed to address the particular instructional needs of the individual trainee, as well as training needs common to anyone learning to use the ETA with which he or she has been matched. For guidance in developing such a training course, the instructor needs to identify any remedial needs, and determine the trainee's relevant baseline strengths and weaknesses in O&M performance. Accordingly, it is appropriate to:

1. look back at the last three Selection Considerations, given previously, to establish remedial training needs;
2. administer the Evaluation of Attained Performance pre-tests for Levels 1 - 3 to establish baseline skills that can be developed and expanded;

IDENTIFYING REMEDIAL NEEDS

At this point the ESSETS trainee will have completed materials in booklet two, Selection and Matching. It has been pointed out that by use of the selection materials much could be learned about the candidates readiness for ETA training.

To determine remedial needs, the instructor can review the trainee's scores on Selection Consideration #5 "Readiness in Basic Mobility Skills," #6 "Readiness in Awareness of Environmental Elements," and #7 "Readiness in Functional Knowledge of Compass Directions,"* which are performance-based readiness assessments.

---

*The reason for utilizing these scores as indicators of remedial needs will be found in the "Rationale" preceding each Selection Consideration.

To determine specific remedial needs, the instructor should refer to the above three Readiness Assessments themselves, noting the content of individual items on which the trainee received a "no" score, or a very low number score.

The instructor can then determine the nature of the remedial need and whether it could best be addressed before ETA instruction is begun, or incorporated into the ETA training course itself.

A suggested remedial needs summary sheet and an approach to its interpretation follow.

REMEDIAL NEEDS SUMMARY SHEET

Readiness of Basic Mobility Skills
(Selection Consideration #5)

Posture

_____ (01)
_____ (02)

Safety of cane/dog-guide technique

_____ (03)
_____ (04)

Street crossings and ambient sound

_____ (05)
_____ (06)
_____ (07)

Understanding parallel and perpendicular

_____ (08)

TOTAL SCORE for Readiness Assessment

High ☐ 6-8
Moderate ☐ 4-5
Low ☐ 0-3

Readiness in Awareness of Environmental Elements

In residential area

_____ (01)

In business area

_____ (02)

Specific to street crossings in both areas

_____ (03)

TOTAL SCORE for Readiness Assessment

High ☐ 10+
Moderate ☐ 7-9
Low ☐ 0-6

Readiness in Functional Knowledge of Compass Directions
(Selection Consideration #7)

(Individual items not required)

TOTAL SCORE for Readiness Assessment

High ☐ 8-12
Moderate ☐ 5-7
Low ☐ 0-4

REMEDIAL NEEDS: Interpreting Assessment Information

The Readiness Assessment of Basic Mobility Skills and the Readiness Assessment of Awareness of Environmental Elements test serially, rather than cumulatively; they test for discrete sills and behaviors. Thus, for the purpose of remedial needs training, individual item scores on those two Assessments are more indicative than are the total scores. This is why individual item scores for those Assessments are shown on the suggested remedial needs summary sheet. The Readiness Assessment of Functional Knowledge of Compass Directions tests for cumulative knowledge; thus the total score is the only remedial need indicator needed.

SAMPLE ANALYSIS

REMEDIAL NEEDS SUMMARY SHEET

Readiness of Basic Mobility Skills
(Selection Consideration #5)

Posture
yes (01)
yes (02)

Street crossings and ambient sound
yes (05)
yes (06)
no (07)

Safety of cane/dog-guide technique
yes (03)
yes (04)

Understanding parallel and perpendicular
yes (08)

TOTAL SCORE for Readiness Assessment
High ☑
Moderate ☐
Low ☐

Even though the trainee received a high total score here, he received a score of "no" on one item (07). Since the Readiness Assessment tests serially, rather than cumulatively, this item score indicates a remedial need related to his ability to cross streets. For more detailed information on this remedial need, one can glance at item (07) in the Readiness Assessment, and see that this trainee does not cross safely at signal regulated intersections.

……

Readiness in Awareness of Environmental Elements

In residential area
4 (01)

In business area
1 (02)

Specific to street crossings in both areas
0 (03)

TOTAL SCORE for Readiness Assessment
High ☐
Moderate ☐
Low ☑

Next, notice that the trainee received a low total score on the second Readiness Assessment trial. A low total score always indicates remedial needs. Looking at his item (01), (02), (03) scores one sees that his low total score resulted from his very limited knowledge about environmental elements commonly found in business areas. (He gave the name and appropriate location for only one environmental element in a business area, and couldn't give any ways in which residential and business crossings differ from each other.)

……

Readiness in Functional Knowledge of Compass Directions
(Selection Consideration #7)

(Individual items not required)

TOTAL SCORE for Readiness Assessment
High ☐
Moderate ☑
Low ☐

On the final Readiness Assessment trial, the trainee shows a moderate total score. Because the skill assessed is cumulative rather than serial, we needn't look at separate item scores. The moderate total score indicates only moderate needs.

In light of the preceding, one finds that the trainee needs remedial work in:

1) crossing at signal-regulated intersections

2) familiarization with typical (small/medium) business area environments, including increased knowledge of different street crossing requirements for business and residential areas.

It would also be a good idea to plan course work that would increase his functional knowledge of compass directions. Planning to include practice in using compass directions during regular ETA training would probably be sufficient.

One advantage of using a Remedial Needs Summary Sheet is that you can see how needs demonstrated on different tests may be related to each other. This can help you plan efficient ways of dealing with remedial needs. For example, this trainee's scores show that he knows a fair amount about residential areas--(01)--but doesn't know about business areas, nor about crossing at signal-regulated intersections. Probably most of his travel has been in residential areas; he probably has had very little exposure to business environments or to signal-regulated crossings. The instructor could work with him in a business area, to increase his awareness of the elements and O & M techniques associated with that sort of environment.

ASSESSING THE TRAINEE'S BASELINE STRENGTHS AND WEAKNESSES

As was mentioned earlier, the trainee's relevant baseline strengths and weaknesses should be determined before training is begun, so that course design can provide for instructional emphasis on those skills which are most in need of improvement.

To determine baseline skills, the instructor should administer the Evaluation of Attained Performance pretests, found in ESSETS booklet three, Environmental Sensing Evaluation of Attained Performance. These Performance Exercises examine the extent to which the trainee can demonstrate proficiency in selected skills important for independent orientation and mobility and an independent lifestyle.

Through reviewing the trainee's pretest scores on the Performance Exercises, the instructor can determine which skill areas give the trainee the most difficulty, and obtain a good initial estimate of the trainee's separate baseline skills. The instructor can thus use this information to decide which aspects of the ETA training course will merit special instructional emphasis and which areas of the trainee's progress warrant most careful monitoring during the course.

The Performance Exercises are presented in three levels which coincide with the three levels of ETA training. Accordingly, the instructor may approach pretest administration in one of two ways. The instructor may either

1) administer Performance Exercise pretests for all three levels before beginning any training

OR

2) administer Performance Exercise pretests for Level 1 before beginning Level 1 training, then complete Level 1 training and administer Level 2 Performance Exercise pretests before beginning Level 2 training, and so on for Level 3 pretests and training.

Either approach will provide the instructor with an assessment of baseline skills pertinent to each level of training before instruction on that level actually begins.

The following example shows a Performance Exercise Summary Sheet for yes/no entries which has been filled out to provide a pretest summary for an imaginary trainee. By entering pretest scores in the appropriate blanks, the instructor can see at a glance his trainee's baseline strengths and weaknesses. In the example given, the instructor first looked at the completed pretests and placed checks on the summary sheet next to those items that were successfully performed by the trainee in the pretest.

Here's how the transfer is made:

(1) Numbers across the top of the summary sheet correspond to Exercises 1-7 in the Level 2 Performance Exercises. Numbers in the vertical columns represent items in each Exercise that have "yes" or "no" answers, so that one can indicate whether the trainee did or did not accomplish the criterion.

The trainee in this example had a "no" score on item B09 and item B11 (Exercise 2), so those items are not checked. He had a "yes" score on item B08 and item B10, so those items are checked. Note that items B08 and B10 are checked each time they appear in Column 2. Column by column transfer of "yes" scores continues in this same manner through Exercise 7.

(2) After each column is complete, the "yes" checks for each instructional outcome are totaled and entered in the right hand column (under Total Pretest). The number of "no" (unchecked) items is also totaled and entered on the right.

The trainee in this example had 2 "yes" and 2 "no" items that relate to the first instructional outcome. This is a reasonably good pretest performance and is in sharp contrast to the seventh outcome in which there were 0 "yes" marks and 6 "no" marks scored during the pretest.

(3) Inspection of these "yes" and "no" totals for each instructional outcome suggests skills that might be emphasized when lesson plans and practice assignments are being developed.

Notice that the instructor in this example has chosen to note the percentage of success for each outcome in order to facilitate interpretation. (To find percentage of success for an instructional outcome, divide the total number of "yes" scores for that outcome by the total number of items for that outcome--e.g., the trainee had two "yes" scores for outcome number one, "Ability to Control/Correct Veer"; there were four items possible for that outcome, so 2 divided by 4 = 0.5, x 100 = 50. The percentage of success for that outcome was 50%.)

LEVEL 2--PERFORMANCE EXERCISES

SUMMARY SHEET--YES/NO ENTRIES

	Performance Exercises							Total Pretest	Total Posttest
Instructional Outcomes	1	2	3	4	5	6	7		
ABILITY TO CONTROL/ CORRECT VEER					E06✓ E09 E11✓		G05	yes 2 no 2 50%	yes ____ no ____
ABILITY TO ESTABLISH AND MAINTAIN ORIENTATION		B08✓ B09 B10✓ B11				F05 F06		yes 2 no 4 33%	yes ____ no ____
ABILITY TO TRAVEL WITH INCREASED EFFICIENCY AND SAFETY		B08✓ B09 B10✓		D05 D06 D09✓ D10✓ D11	E05 E06✓ E07 E08 E09 E10 E11✓ E12		G05 G07	yes 6 no 10 37%	yes ____ no ____
ABILITY TO TRAVEL WITH A MINIMUM OF DEVIANT PERIPATETIC BEHAVIOR	A06 A08		C05	D07 D11			G05	yes 0 no 6 0%	yes ____ no ____
ABILITY TO TRANSFER ENVIRONMENTAL ELEMENTS RECOGNITION AMONG TYPICAL ENVIRONMENTS		B09						yes 0 no 1 0%	yes ____ no ____
ABILITY TO USE PUBLIC TRANSPORTATION				D09✓ D10✓		F05 F07✓		yes 3 no 1 75%	yes ____ no ____
AVOIDANCE OF OBSTACLES					E05 E07 E08 E10 E12	F05 F06		yes 0 no 7 0%	yes ____ no ____
INCREASED CONTROL IN INTERACTIONS WITH SIGHTED PUBLIC					E05 E07 E10 E12	F05 F06 F07✓		yes 1 no 6 14%	yes ____ no ____
USE OF AMBIENT SOUND								yes NA no	yes ____ no ____
USE OF/INTERACTION WITH SHORELINE	A06 A08		C05	D05 D06 D07	E06✓ E09 E11✓ E13✓			yes 3 no 7 30%	yes ____ no ____
USE OF LANDMARKS		B08✓ B09	C05 C06	D05 D09✓ D11			G06 G07	yes 2 no 7 22%	yes ____ no ____

Bear in mind that some items do not appear on the summary score sheet for "yes/no" entries. That is because some items receive number scores. These items appear on the summary sheet for numerical entries. Interpretation of the numerical scores depends chiefly on comparative data--so they are less useful now in assessing baseline skills than they will be later in assessing final training outcomes after the posttest has been given. However, if the instructor notices the context of the numerical score items as he is transferring them from the pretests to the numerical summary, he can relate them to the information in the "yes/no" summary in a way that gives added depth to the assessment of baseline skills.

Here is a sample Level 2 summary sheet for numerical entries, filled out for the imaginary trainee, and considered in relationship to that trainee's "yes/no" summary sheet:

LEVEL 2 - PERFORMANCE EXERCISES

SUMMARY SHEET - NUMERICAL ENTRIES

Item Number	Contact Errors		Check if Improvement Shown	Elapsed Time		Check if Improvement Shown	Environmental Detections		Check if Improvement Shown
	Pre	Post		Pre	Post		Pre	Post	
A05							3		
A07							2		
D08				4'					
D12				1'40"					
E14				2'30"					
1. Total number of items					3			2	
2. Number of items attempted									
3. Number of items showing improvement									

In transferring the pretest numerical scores, the instructor may note that the trainee failed to detect two out of five open doorways and four out of six doors, and that it took the trainee a long time to walk one-half block and detect a mailbox. The instructor might then surmise that, taken together, these scores reflect difficulty in detecting and recognizing common environmental elements which are lateral to the travel path. This observation is consistent with "yes/no" summary scores for interaction with the shoreline, use of landmarks, and environmental element recognition.

ESSETS TRAINING

- ESSETS TRAINING
- DESIGNING LESSON PLANS AND INDEPENDENT EXERCISES
- MONITORING TRAINEE GROWTH

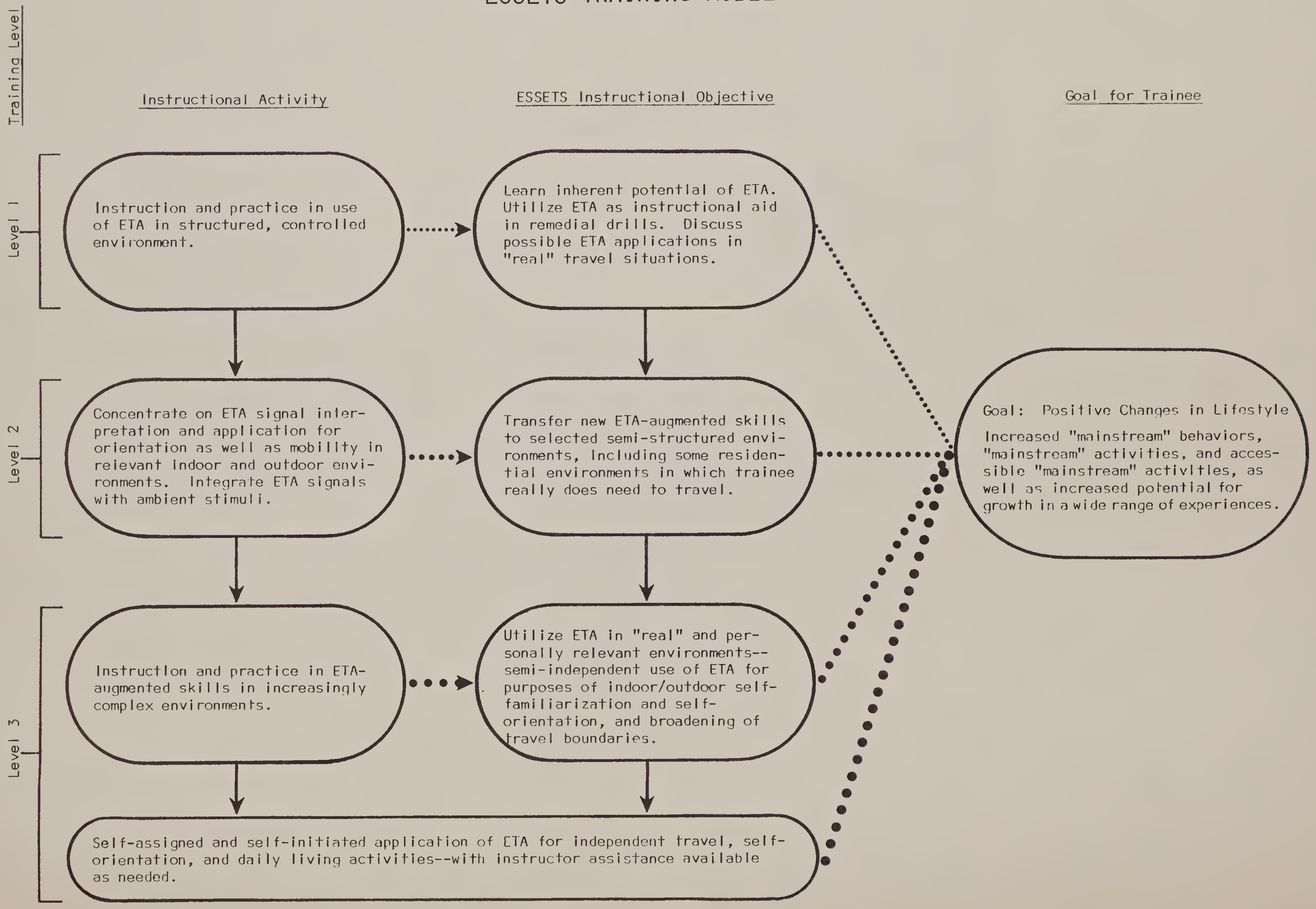
ESSETS TRAINING

The ESSETS training system is not intended as a substitute for the courses of training presented in instruction manuals by the manufacturer or distributor for use with a particular ETA. ESSETS Training Guidelines should provide a valuable supplement to those instruction manuals.

As is true of all ESSETS components, the Training Guidelines are directed toward a long-range goal. The instructional objectives for ESSETS training are intended to expedite positive changes in the lifestyle of the ETA trainee. Potentially, there are many ways in which training can lead to a richer, fuller life. For example, increased ability to function independently and increased confidence have a positive effect on the whole person, and this carries over to influence many areas of that person's life. The instructor's role is to contribute to each trainee's personal growth by guiding him or her through several levels or stages of learning, in which specific skills are organized in such a way that they can culminate in positive overall changes in lifestyle.

The following training model illustrates these levels of learning and the ways in which they build toward a goal that extends beyond improved orientation and mobility performance.

ESSETS TRAINING MODEL



Instruction and practice in use of ETA in structured, controlled environment.

Learn inherent potential of ETA. Utilize ETA as instructional aid in remedial drills. Discuss possible ETA applications in "real" travel situations.

Concentrate on ETA signal interpretation and application for orientation as well as mobility in relevant indoor and outdoor environments. Integrate ETA signals with ambient stimuli.

Transfer new ETA-augmented skills to selected semi-structured environments, including some residential environments in which trainee really does need to travel.

Instruction and practice in ETA-augmented skills in increasingly complex environments.

Utilize ETA in "real" and personally relevant environments--semi-independent use of ETA for purposes of indoor/outdoor self-familiarization and self-orientation, and broadening of travel boundaries.

Self-assigned and self-initiated application of ETA for independent travel, self-orientation, and daily living activities--with instructor assistance available as needed.

Goal: Positive Changes in Lifestyle

Increased "mainstream" behaviors, "mainstream" activities, and accessible "mainstream" activities, as well as increased potential for growth in a wide range of experiences.

DESIGNING LESSON PLANS AND INDEPENDENT EXERCISES

The unique role of the orientation and mobility instructor is to shape lessons to meet local and individual needs. The following pages provide examples of the type of lesson plans and independent practice assignments that could be developed locally at each level of training and skill reinforcement. Any lesson plans that the instructor develops should be heavily influenced by the trainee's assessed baseline skills and remedial requirements, and by the environment(s) in which he or she expects to travel. Practice exercises that do not involve the instructor should reflect sensitivity to the particular skill reinforcement needed by the individual trainee.

The concept of independent practice--or "homework"-- may seem a bit novel, but it can play an important role in the reinforcement and improvement of basic O&M skills as well as in ETA training and mastery. The ETA is especially suited to "homework," since it can give the user immediate feedback as a result of his or her actions. Thus, in predetermined circumstances (e.g., a controlled environment) an ETA enables the user to monitor his or her own performance during practice exercises. He or she can then make an informed comparison between actual performance and desired performance, realize quickly if an error has been made, correct it, and continue independent practice towards perfecting the specific technique involved.

The instructor should observe and provide feedback to the trainee at least once for each practice exercise before assigning it for independent practice. This is to make sure that the trainee understands the exercise and knows how to recognize and correct errors.

During ETA training, the instructor can design practice assignments which fit many individual needs while reducing demands on instructor time. For example, assignments might

- provide practice (in a safe environment) in an ETA technique which the trainee finds especially hard to master
- provide practice in some ETA application that should help the trainee improve an O&M skill which has always given him difficulty (e.g., following a shoreline, correcting veers, etc.)
- reinforce a technique/skill introduced in a preceding lesson

Level 1--Structured Settings and Controlled Travel

Sample Lesson Plan. Instruct the trainee in interpreting ETA signals to get information on the width of detected objects. Have trainee scan several objects of different widths and identify them in terms of "widest," "next widest," and "narrowest." Then have the trainee walk forward, with the objects on his or her right/left. See if the trainee can determine, via ETA signals (rather than making contact with them), which of the lateral objects is widest and which narrowest.

Sample Practice Exercise. Assign practice in using the ETA for purposes of paralleling a continuous vertical shoreline while trying to detect doorways (open and closed) in that shoreline. An outside building wall or indoor hall wall with doors in it should do, as long as the door jambs present perpendicular surfaces detectable to the device when doors are closed. The trainee should be far enough away from the wall so that no cane contact will be made with it. During early practice, the trainee can "move in" towards the wall to confirm the existence of a doorway he or she believes has been detected, then move out and realign for forward movement. After adequate practice the trainee should not need to do this in order to confirm a detected doorway.

Level 2--Semi-Structured Settings and Intermediate Travel

Sample Lesson Plan. Work with trainee on a route or routes he or she must use while changing classes. Look for any stationary objects which may provide ambient clues (e.g., a bank of lockers may provide an ambient sound clue), or landmarks accessible to the ETA. Help to reinforce techniques (introduced in Level 1) for avoiding moving obstacles, and transfer this to life travel situations. Provide plenty of feedback on the kinds of pedestrian encounters that recur, and make note of situations in which the trainee's ETA technique is good or needs improvement. As time permits, work with the trainee to establish a route from buildings to school bus.

Sample Practice Exercise. Reinforce techniques for avoiding collisions with pedestrians, and also techniques for locating and "tracking" pedestrians (in lines, for soliciting aid, etc). Assign trainee practice with one of his or her friends or family members. Have the trainee locate the other person and "track" that person, trying to keep the person in ETA signal range as they both move forward. The participant should begin to complicate matters by deliberately turning, stopping, etc., after the trainee has had some practice. The trainee should try to avoid contact with the participant. This exercise should be done in an obstacle-free area. A block in a quiet residential neighborhood would do.

Level 3--Unstructured Settings and Independent Travel

Sample Lesson Plan. During "slow" business hours, orient the trainee to the inside of a local market, and introduce him or her to ETA-enhanced self-familiarization techniques useful in such indoor environments. For example, the trainee should be taught to count aisles, turning down the aisle he or she wishes (e.g., 1st aisle, condiments; 2nd aisle, staples, cereal; etc.). He or she should also be taught to locate other shoppers in the aisle for purposes of either obstacle avoidance or for soliciting aid to get the specific item wanted from shelves in that aisle. Finally, include training in how to locate a check-out counter and/or line of persons waiting for check-out.

Sample Practice Exercise. After the trainee has progressed in Level 3 to the point of accepting independent assignments, select a shop (e.g., doughnut shop, record shop) a few blocks beyond trainee's present travel boundaries. Have the trainee get the address (e.g., from the telephone information operator) and plan a route, extending his or her travel boundaries from a street with which he or she is already familiar to the point where the shop is located. (Since instruction in this process should have taken place already, help the trainee only if necessary.) After the trainee describes the planned route and it is okayed, he or she will follow this route. He or she will solicit aid from a pedestrian, or (entering any shop) from a shopkeeper, on the same block as his or her destination. After reaching the shop via solicited aid, the trainee will scan the shorelines in the immediate area to detect any ETA-accessible landmarks which would enable him or her to find the shop again without soliciting aid. (The instructor will follow-up this exercise with a lesson in which the trainee travels to the shop, demonstrating use of selected landmarks and receiving instruction as necessary.)

MONITORING TRAINEE GROWTH

As training occurs it is *essential* that records be kept of the trainee's growth. Records should be kept that show a) time invested in training, b) specific skills newly mastered, and c) the range and results of applications tried out in various contexts. The following pages show fictitious examples of how this information should be kept on a current basis.

The Log of Instruction Time on the next page should be filled out by tallying each *hour* of instruction time *and* practice time as shown below.

January	Instruction time	卌 |||	8
	Practice time	||||	4
February	Instruction time	卌 卌 |	11
	Practice time	卌 |	6

NOTE: Practice time may be independently carried out, necessitating an estimate on the basis of information from the trainee.

Following the blank Log of Instruction Time are examples of Progress Logs (and their corresponding blanks) by which trainee accomplishments are monitored through three levels of learning. They include:

Level 1 : Progress in structured settings that involve controlled travel

Level 2 : Progress in semi-structured settings that involve intermediate travel

Level 3 : Progress in unstructured settings that involve independent travel

LOG OF INSTRUCTION TIME

Trainee (name or #)____________________ Training Center_______________

January	Instruction time	____________	_______
	Practice time	____________	_______
February	Instruction time	____________	_______
	Practice time	____________	_______
March	Instruction time	____________	_______
	Practice time	____________	_______
April	Instruction time	____________	_______
	Practice time	____________	_______
May	Instruction time	____________	_______
	Practice time	____________	_______
June	Instruction time	____________	_______
	Practice time	____________	_______
July	Instruction time	____________	_______
	Practice time	____________	_______
August	Instruction time	____________	_______
	Practice time	____________	_______
September	Instruction time	____________	_______
	Practice time	____________	_______
October	Instruction time	____________	_______
	Practice time	____________	_______
November	Instruction time	____________	_______
	Practice time	____________	_______
December	Instruction time	____________	_______
	Practice time	____________	_______

Progress Log: Level 1

STRUCTURED SETTINGS - CONTROLLED TRAVEL

Trainee________________ Center________________

	Does with assistance	Does independently
	Enter Date Achieved	
A. EQUIPMENT		
1. Operates ETA's manual controls		Sept 5, '78
2. Performs basic tasks necessary for maintenance	Sept 5, '78	Sept. 8, '78
3. Identifies signals making up basic display	Sept. 5, '78	Sept. 8, '78
B. ASSOCIATING ETA SIGNALS WITH PARTICULAR ENVIRONMENTAL FACTORS		
1. Detects and locates objects via ETA signals		SEPT. 12, '78
2. Detects and avoids stationary obstacles	SEPT. 12, '78	SEPT. 14, '78
3. Uses ETA to get information on object characteristics (e.g., height, width, texture, etc.--as appropriate to capabilities of ETA being used)	SEPT. 16, '78	SEPT. 20, '78
4. Judges approximate distance from object/obstacle (as appropriate to capabilities of ETA being used)	SEPT. 12, '78	SEPT. 16, '78
5. Detects breaks in vertical shoreline	SEPT. 20, '78	SEPT. 23, '78
C. INTERPRETING AND ACTING UPON ENVIRONMENTAL EVENTS		
1. Parallels a continuous vertical shoreline	SEPT. 19, '78	SEPT. 20, '78
2. Parallels a serial (e.g., consistently placed poles) vertical shoreline	SEPT. 12, '78	SEPT. 14, '78
3. Detects and responds appropriately to overhangs	SEPT. 20, '78	SEPT. 22, '78
4. Realizes when/if he is misdirecting signal beam and therefore receiving distorted signal information	SEPT. 14, '78	SEPT. 20, '78
5. Detects clear-path between objects/obstacles	SEPT. 14, '78	SEPT. 16, '78
6. Discriminates between lateral and in-path stationary objects/obstacles (while trainee is in motion)	SEPT. 16, '78	SEPT. 26, '78

	Does with assistance	Does independently
	Enter Date Achieved	
7. Demonstrates basic understanding of limitations inherent in mechanics of ETA (e.g., blind corners, false signals) of relevance to decision making during ETA travel	SEPT. 23,'78	SEPT. 30,'78
8. Determines direction of moving obstacle (e.g., towards, away from, across path)	SEPT. 21,'78	SEPT. 26,'78
9. Recognizes a distinct predetermined signal-accessible environmental event (object/landmark) and redirect line of travel in predetermined manner upon recognition	SEPT. 23,'78	SEPT. 28,'78
10. Makes an appropriate travel judgment based on interpretation of basic signal information in combination with ambient sound clues	SEPT. 26,'78	SEPT. 30,'78

INSTRUCTOR'S REMARKS ABOUT GAINS THE TRAINEE IS LEARNING TO INTERPRET SIGNAL INFORMATION ACCURATELY AND (VERY IMPORTANTLY) TO TRUST HIS INTERPRETATIONS WITHOUT REQUIRING CONCRETE/TACTUAL CONFIRMATION OF THE SIGNAL SOURCE.

TRAINEE IS REDUCING THE AMOUNT OF TIME HE NEEDS TO RESPOND TO SIGNAL INFORMATION, AND HE IS IMPRESSED BY HIS ABILITY TO TRAVEL AN OBSTACLE COURSE WITH FEW-TO-ZERO CANE CONTACTS. WE'LL HAVE TO BE CAREFUL THAT HE DOESN'T TRY TOO MANY THINGS THAT ARE BEYOND HIS PRESENT ABILITY & CONFUSE/DISCOURAGE HIM.

TRAINEE'S REMARKS ABOUT GAINS TRAINEE SAYS: HE ENJOYS THE ABILITY, PROVIDED BY ETA USE, TO BE AWARE OF OBJECTS, AND SOME CHARACTERISTICS OF OBJECTS, WHICH ARE BEYOND REACH OF THE LONG CANE. HE IS ANXIOUS TO TRY OUT THE DEVICE IN REAL TRAVEL SITUATIONS OUTSIDE. HE HAS IN MIND SEVERAL SITUATIONS IN WHICH HE THINKS THE DEVICE WOULD BE HELPFUL; AND WANTS TO TEST IDEAS ABOUT HOW BEST TO USE IT IN THOSE SITUATIONS.

Progress Log: Level 1

STRUCTURED SETTINGS - CONTROLLED TRAVEL

Trainee_______________ Center_______________

	Does with assistance	Does independently
	Enter Date Achieved	
A. EQUIPMENT		
1. Operates ETA's manual controls		
2. Performs basic tasks necessary for maintenance		
3. Identifies signals making up basic display		
B. ASSOCIATING ETA SIGNALS WITH PARTICULAR ENVIRONMENTAL FACTORS		
1. Detects and locates objects via ETA signals		
2. Detects and avoids stationary obstacles		
3. Uses ETA to get information on object characteristics (e.g., height, width, texture, etc.--as appropriate to capabilities of ETA being used)		
4. Judges approximate distance from object/obstacle (as appropriate to capabilities of ETA being used)		
5. Detects breaks in vertical shoreline		
C. INTERPRETING AND ACTING UPON ENVIRONMENTAL EVENTS		
1. Parallels a continuous vertical shoreline		
2. Parallels a serial (e.g., consistently placed poles) vertical shoreline		
3. Detects and responds appropriately to overhangs		
4. Realizes when/if he is misdirecting signal beam and therefore receiving distorted signal information		
5. Detects clear-path between objects/obstacles		
6. Discriminates between lateral and in-path stationary objects/obstacles (while trainee is in motion)		

	Does with assistance	Does independently
	Enter Date Achieved	
7. Demonstrates basic understanding of limitations inherent in mechanics of ETA (e.g., blind corners, false signals) of relevance to decision making during ETA travel		
8. Determines direction of moving obstacle (e.g., towards, away from, across path)		
9. Recognizes a distinct predetermined signal-accessible environmental event (object/landmark) and redirect line of travel in predetermined manner upon recognition		
10. Makes an appropriate travel judgment based on interpretation of basic signal information in combination with ambient sound clues		

INSTRUCTOR'S REMARKS ABOUT GAINS

TRAINEE'S REMARKS ABOUT GAINS

Progress Log: Level 2

SEMI-STRUCTURED SETTINGS - INTERMEDIATE TRAVEL

Trainee________________ Center________________

A. NECESSARY

	Needs assistance	Does independently but inefficiently	Does independently and efficiently
	Enter Date Achieved		
1. BUS STOP FOR SCHOOL BUS - FROM HOME Problem(s): 1) CROSSING AT 'T' INTERSECTION 2) IN-PATH OBSTACLES EVERY THURSDAY (TRASH DAY)		Oct. 3, '78	Oct. 20, '78
2. BUS STOP FOR BUS HOME FROM SCHOOL Problem(s): 1) NAVIGATION OF SCHOOL PARKING LOT	Oct. 5, '78	Oct. 14, '78	Dec. 15, '78
3. MAILBOX NEAR HOME Problem(s): 1) CROSSING OFF-SET (JOGGED) INTERSECTION WITH FEW AMBIENT SOUND (TRAFFIC) CLUES. OFTEN MISSES UP-CURB 2) TRAILING PLANTED OSL ½ block TO FIND BOX. SLOW. OFTEN SNAGS CANE.		Oct. 3, '78	Oct. 26, '78
4. CHANGING CLASSES ON CAMPUS Problem(s): 1) OBSTACLE AVOIDANCE - OTHER STUDENTS ALSO CHANGING CLASSES.		Oct. 5, '78	Nov. 11, '78
5. Problem(s):			
6. Problem(s):			

B. OPTIONAL

	Enter Date Achieved		
	Needs assistance	Does independently but inefficiently	Does independently and efficiently
1. TO FRIEND'S APARTMENT Problem(s): 1) DISORIENTATION – Apt. IS PART OF APARTMENT COMPLEX, DOORS REACHED VIA NETWORK OF PAVED PATHS THROUGH LARGE GARDEN AREA IN FRONT OF BUILDING.	Oct. 7, 78	Nov. 16, 78	
2. To public swimming pool Problem(s): 1) LOCATING PUSH-BUTTON SIGNAL LIGHT POLE AT SECOND CROSSING; TWO POLES PRESENT.		Nov. 2, 78	Nov 8, 78
3. NAVIGATION INSIDE POOL BUILDING Problem(s): 1) ORIENTATION INSIDE DRESSING ROOM SECTION, ETC. OF POOL BUILDING.	Nov. 7, 78	Nov. 14, 78	
4. DENTIST - SAME BLOCK AS BUS STOP Problem(s): 1) LOCAL ORIENTATION & OBSTACLE (PEDESTRIAN) AVOIDANCE AFTER GETTING OFF BUS 2) GENERAL ORIENTATION INSIDE DENTAL BUILDING	Nov. 18, 78	Nov. 23, 78	Nov. 28, 78

INSTRUCTOR'S REMARKS ABOUT GAINS THE TRAINEE IS DISCOVERING & CORRECTING SOME MISCONCEPTIONS ABOUT THE NUMBER & PLACEMENT OF SOME OF THE STABLE OBJECTS IN THE ENVIRONMENT; HE'S DEVELOPING A MORE DETAILED "PICTURE" OF HIS SURROUNDINGS.

TRAINEE'S REMARKS ABOUT GAINS TRAINEE SAYS: HE'S WILLING TO TRY MORE "THINGS" NOW THAN BEFORE HE HAD THE ETA; VERBAL FAMILIARIZATIONS ARE MORE USEFUL BECAUSE MORE OF THE THINGS PEOPLE MENTION ARE DETECTABLE TO AN ETA USER THAN TO AN ETA NON-USER.

Progress Log: Level 2

SEMI-STRUCTURED SETTINGS - INTERMEDIATE TRAVEL

Trainee________________ Center________________

	Needs assistance	Does independently but inefficiently	Does independently and efficiently
	Enter Date Achieved		
A. NECESSARY			
1. Problem(s):			
2. Problem(s):			
3. Problem(s):			
4. Problem(s):			
5. Problem(s):			
6. Problem(s):			

B. OPTIONAL

	Needs assistance	Does independently but inefficiently	Does independently and efficiently
	Enter Date Achieved		
1. Problem(s):			
2. Problem(s):			
3. Problem(s):			
4. Problem(s):			

INSTRUCTOR'S REMARKS ABOUT GAINS ______________________________

____

____

____

TRAINEE'S REMARKS ABOUT GAINS ______________________________

____

____

____

Progress Log: Level 3

UNSTRUCTURED SETTINGS - INDEPENDENT TRAVEL

Trainee______________ Center______________

Enter Date Achieved

	Needs assistance	Does independently but inefficiently	Does independently and efficiently
A. NECESSARY			
1. INSIDE SUPERMARKET Problem(s): 1) GENERAL ORIENTATION & OBSTACLE AVOIDANCE 2) LOCATING OTHER SHOPPERS FOR AID IN SELECTING FROM SHELVES 3) NAVIGATING CHECK-OUT COUNTERS.	Dec. 2,'78	Dec. 16,'78	Jan. 30,'79
2. TO BARBER SHOP Problem(s): 1) ACCIDENTALLY WALKING INTO STREET BECAUSE OF "BLENDED" CURBS ON ROUTE. USED CAR SALES LOT IN ISL – LOT WITH PARKED CARS PRESENTS VERY IRREGULAR SL. INCONVENIENT FOR TRAILING FOR SEVERAL REASONS. CURB AT INTERSECTION ALSO "BLENDED".		Dec. 7,'78	Jan. 6,'79
3. RECORD SHOP Problem(s): 1) MODERATE PEDESTRIAN-CONGESTION AREA 2) PEOPLE WAITING FOR BUS, ALONG THE STORE FRONT, MAKE AWKWARD TRAILING FOR SET-BACK DOOR WAY. ALSO MASK DOORWAY'S ECHO	Jan. 5,'79	Feb. 3,'79	
4. CHURCH - 1 EVENING WEEKLY CHOIR PRACTICE Problem(s): 1) BEYOND INDEPENDENT TRAVEL BOUNDARIES. 2) CHURCH GROUNDS, PATHS TO BUILDING, ETC. SEEM TOO COMPLEX. GOES ON SUNDAY ONLY WITH FAMILY.	Jan. 12,'79	Jan. 24,'79	Jan. 31,'79
5. BUS STOP - TRANSFER POINT FOR MALL BUS Problem(s): 1) LOCATING BUS STOP/PEOPLE WAITING FOR BUS 2) BOARDING BUS – LOCATING DOOR/FOLLOWING LINE ONTO BUS 3) VEERING ON ROUTE		Feb. 13,'79	March 14,'79
6. DEPARTMENT STORE Problem(s): 1) OBSTACLE AVOIDANCE & VEERING ON ROUTE & AT CROSSINGS 2) PROBLEM DETECTING DOORWAY BECAUSE OF MASKING SOUNDS (TRAILING MEANS MUCH PEDESTRIAN-CANE CONTACT)			

B. OPTIONAL	Needs assistance	Does independently but inefficiently	Does independently and efficiently
	Enter Date Achieved		
1. INCREASED SHOPPING ALTERNATIVES—# OF STORES IN AREA WITHIN EXISTING TRAVEL BOUNDARIES Problem(s): 1) MIGHT "LOCATE" STORE/FIND OUT NATURE OF BUSINESS VIA SOLICITATION OF AID FROM PEDESTRIANS/SHOPKEEPERS, BUT WOULD HAVE DIFFICULTY LEARNING TO FIND SAME STORE AGAIN INDEPENDENTLY	NOV. 17, '78	DEC. 3, '79	DEC. 16, '79
2. Softball, etc. game attendance – bleachers IN LOCAL PARK Problem(s): 1) WINDING PATHS WITHOUT ACCESSIBLE LANDMARKS — SIGHTED-GUIDE NOT OFTEN AVAILABLE 2) BLEACHERS SET-BACK, ACROSS LAWN, HARD to LOCATE EVEN WHEN ON CORRECT PATH TO BLEACHER AREA.	DEC. 10, '78		DEC. 20, '78
3. (Hobby activity) PLANTING STRAIGHT, PARALLEL ROWS IN GARDEN Problem(s): 1) STAKING-OUT plot FOR KITCHEN GARDEN 2) STAKING OUT EACH ROW/LOCATING SPECIFIC ROW FOR WEEDING, HARVESTING, ETC. (Plan to USE TALL POLES AT EACH CORNER OF PLOT, SHORTER POLES AT HEAD OF EACH ROW)		JAN. 2, '79	JAN. 12, '79
4. NEGOTIATING WORK AREA AT PART-TIME JOB Problem(s): 1) TRAINEE WAS OFFERED PART-TIME JOB IF HE CAN MOVE THROUGH THE WORK AREA WITHOUT DISRUPTING OR DISTURBING WORK OF OTHER EMPLOYEES	FEB. 1, '79	FEB. 5, '79	FEB 8, '79

INSTRUCTOR'S REMARKS ABOUT GAINS PRIOR TO ETA INSTRUCTION THE TRAINEE ALWAYS AVOIDED INDEPENDENT TRIPS IN EVEN THE MEDIUM BUSINESS AREA; THE RELATIVELY HIGH LEVEL OF AMBIENT SOUND SEEMED TO MASK CUES HE sought.

TRAINEE'S REMARKS ABOUT GAINS TRAINEE FEELS THAT HE MAKES A BETTER IMPRESSION ON OTHER PEOPLE BECAUSE HE VEERS LESS, DOESN'T HAVE COLLISIONS, AND FINDS HIS DESTINATION WITHOUT A LOT OF PROBING & POKING AROUND.

Progress Log: Level 3

UNSTRUCTURED SETTINGS - INDEPENDENT TRAVEL

Trainee________________ Center________________

	Needs assistance	Does independently but inefficiently	Does independently and efficiently
	Enter Date Achieved		
A. NECESSARY			
1. Problem(s):			
2. Problem(s):			
3. Problem(s):			
4. Problem(s):			
5. Problem(s):			
6. Problem(s):			

B. OPTIONAL

	Needs assistance	Does independently but inefficiently	Does independently and efficiently
	Enter Date Achieved		
1. Problem(s):			
2. Problem(s):			
3. Problem(s):			
4. Problem(s):			

INSTRUCTOR'S REMARKS ABOUT GAINS ______________________________

TRAINEE'S REMARKS ABOUT GAINS ______________________________

ASSESSING OUTCOMES

- ASSESSING INSTRUCTIONAL OUTCOMES - LEVEL BY LEVEL

- EVALUATING THE OVERALL EFFECTS OF TRAINING FOR THE INDIVIDUAL

ASSESSING INSTRUCTIONAL OUTCOMES--LEVEL BY LEVEL

If the ETA training course is presented in three levels as suggested in ESSETS training Guidelines, the instructor can assess the instructional outcomes for each level of training as soon as instruction for that level is completed. This assessment is made by administering the Performance Exercise posttests for the appropriate level and comparing the trainee's posttest scores on that level wtih his pretest scores on that level. The pretest for the level, of course, was given before instruction took place.

This amounts to a test-teach-test strategy. It should help both instructor and trainee obtain clear information as to what performance gains are being made, level by level.

The following examples show Level 2 Performance Exercises Summary Sheets filled out for the imaginary trainee.

The transfer of posttest scores from Performance Exercises to the "yes/no" summary sheet is similar to the transfer of pretest scores to that sheet. The instructor filling out this example

(1) placed circles around those items for which the trainee received a "yes" score on the posttest, (circles are used to avoid confusion with "yes" answers from the pretest, which have check marks next to them).

(2) totaled the "yes" circled items for each instructional outcome and entered the total in the right-hand column (under Total Posttest). The number of "no" (uncircled) items was also totaled and entered for each outcome.

The trainee in this example had four "yes" scores and three "no" scores for "Avoidance of Obstacles," the seventh instructional outcome.

(3) compared instructional outcome scores in the Total Posttest column with scores in the Total Pretest column.

The trainee in this example shows performance gains for nine of the instructional outcomes as tested in Level 2.

LEVEL 2--PERFORMANCE EXERCISES

SUMMARY SHEET--YES/NO ENTRIES

Instructional Outcomes	Performance Exercises 1	2	3	4	5	6	7	Total Pretest	Total Posttest
ABILITY TO CONTROL/ CORRECT VEER					[E06]✓ [E09] [E11]✓		[G05]	yes 2 no 2 50%	yes 4 no 0 100%
ABILITY TO ESTABLISH AND MAINTAIN ORIENTATION		[B08]✓ [B09] [B10]✓ [B11]				[F05] F06		yes 2 no 4 33%	yes 5 no 1 83%
ABILITY TO TRAVEL WITH INCREASED EFFICIENCY AND SAFETY		[B08]✓ [B09] [B10]✓		[D05] [D06] D09✓ [D10]✓ [D11]	[E05] [E06]✓ [E07] E08 [E09] E10 [E11]✓ [E12]		[G05] [G07]	yes 6 no 10 37%	yes 13 no 2 86%
ABILITY TO TRAVEL WITH A MINIMUM OF DEVIANT PERIPATETIC BEHAVIOR	[A06] A08		[C05]	[D07] [D11]			[G05]	yes 0 no 6 0%	yes 5 no 1 83%
ABILITY TO TRANSFER ENVIRONMENTAL ELEMENTS RECOGNITION AMONG TYPICAL ENVIRONMENTS		[B09]						yes 0 no 1 0%	yes 1 no 0 100%
ABILITY TO USE PUBLIC TRANSPORTATION				D09✓ [D10]✓		[F05] [F07]✓		yes 3 no 1 75%	yes 3 no 1 75%
AVOIDANCE OF OBSTACLES					[E05] [E07] E08 E10 [E12]	[F05] F06		yes 0 no 7 0%	yes 4 no 3 57%
INCREASED CONTROL IN INTERACTIONS WITH SIGHTED PUBLIC					[E05] [E07] E10 [E12]	[F05] F06 [F07]✓		yes 1 no 6 14%	yes 5 no 2 71%
USE OF AMBIENT SOUND								yes NA no	yes NA no
USE OF/INTERACTION WITH SHORELINE	[A06] A08		[C05]	[D05] [D06] [D07]	[E06]✓ [E09] [E11]✓ E13✓			yes 3 no 7 30%	yes 8 no 2 80%
USE OF LANDMARKS		[B08]✓ [B09]	[C05] C06	[D05] D09✓ [D11]			[G06] [G07]	yes 2 no 7 22%	yes 7 no 2 77%

Gains reflected by fewer contact errors, shorter periods of time elapsed between beginning and completing a task, and more environmental detections are shown by comparison on numerical item pretest scores with posttest scores on the summary sheet for numerical entries.

LEVEL 2 - PERFORMANCE EXERCISES

SUMMARY SHEET - NUMERICAL ENTRIES

Item Number	Contact Errors		Check If Improvement Shown	Elapsed Time		Check If Improvement Shown	Environmental Detections		Check If Improvement Shown
	Pre	Post		Pre	Post		Pre	Post	
A05							3	5	✓
A07							2	5	✓
D08.				4'	2'	✓			
D12				1'40"	1'	✓			
E14				2'30"	2'50"				

	Contact Errors	Elapsed Time	Environmental Detections
1. Total number of items		3	2
2. Number of items attempted		3	2
3. Number of items showing improvement		2	2

EVALUATING THE OVERALL EFFECTS OF TRAINING FOR THE INDIVIDUAL

After the instructor and the trainee feel that sufficient progress has been made so that further instruction is unwarranted, and the trainee has completed training on all three levels insofar as is appropriate to his interests, needs, and capabilities, the instructor should fill out the "Overall Performance Evaluation Forms." These forms facilitate assessment of the total training results by summarizing gains across all three levels of instruction.

There are three forms to assist with this assessment. The first, "Performance Evaluation of Instructional Outcomes," provides information on performance gains for each of the eleven instructional outcomes separately. The second form, "Overall Profile of Individual Achievement," offers information on total gains, without indicating the specific skill area in which a gain was made. The third form, "Interpretation of Performance Evaluation and Individual Achievement," is intended for the instructor to evaluate training results on the basis of the individual trainee's expectations, response, and needs.

These three evaluation forms are found on the last three pages of ESSETS booklet three, "Environmental Sensing, Evaluation of Attained Performance." Before they can be filled out, the trainee must have been pretested, trained, and posttested on all three levels. Instructions on filling out these forms precede them in booklet three.

It is important that the trainee be advised of the outcomes of training, regardless of whether they are modest or extraordinary. He or she should develop a positive feeling about what has been accomplished and should be encouraged to continue using and applying newly learned environmental sensing skills.

HV1708
D366

DeHaas, Carla and
Robert A. Weisgerber.
ENVIRONMENTAL SENSING
TRAINING GUIDES.
(1978)

c.1

DATE DUE

Reference Copy

AMERICAN FOUNDATION FOR THE BLIND
15 WEST 16th STREET
NEW YORK, N.Y. 10011